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ERYTHROXYLON COCA :

A TREATISE ON

BRAIN EXHAUSTION,

AS THE CAUSE OF

D I S E A S E .



BY W. TIBBLES, M.D., (U.S.)



“Believe one who has experience to justify
his opinion.”



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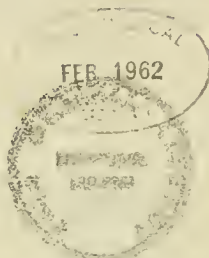
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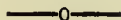
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P R E F A C E .



This work is brought out at the urgent request of a large number of my patients and friends. The principles enunciated herein are the result of study and practice conducted during a long series of years, with I assure the reader, an unwavering and earnest desire to benefit my fellow creatures. The principles laid down may be at variance with received notions; yet, if the reader, untrammelled by all pre-acknowledged dogmas, carefully studies those principles and the applications of them, he will come to the conclusion that they are right. Extended experience has demonstrated to myself that the *regular* system of medicine, if honestly, and disinterestedly considered, is, to say the least, empirical—a destroyer of the vital forces of the patient,—and that the only sure means of restoring diseased persons, is by aiding nature

in her efforts to regain an equilibrium of action, by increasing the quantity of nervous energy, or vital force. This is my distinctive and fundamental principle which is in direct accordance with physiological and pathological laws.

Perfection is not claimed for this Book; but, conscientiously my aim has been to render the best possible information upon the causes and treatment of disease, and to furnish the public with such information as can be acted upon by any one who has the management of children or adults.

In the words of Southey I now dismiss this volume:

“Go little book, from this my solitude:
I cast thee on the waters. Go thy ways;
And if, as I believe, thy vein be good,
The world will find thee after many days.”

W. TIBBLES.

INTRODUCTION.

Man, the Book says, was formed of the dust of the earth, by an Almighty power, perfect in all his parts: every bone so arranged as to be perfectly moveable according to the various required positions—muscles adapted for all purposes—every organ formed for purposes of either secretion, absorption, or excretion—arteries to supply blood to every part, with veins as return pipes—and over all was placed the Brain with the various branches of nerve-fibres, diverging from it to govern every action and movement of the whole machinery—every part is now ready and adapted, the whole forms one complete organism. God now breathes into man life—not merely atmospheric air, dilating the nostrils and inflating the lungs, but imparting to him vitality, spiritual, intellectual, and animal life, in short, man, when created was a perfect being, morally, mentally and physically. But, sad to relate, man did not continue in this perfect state. There came a time when man, not content with the amount of pleasure that naturally devolved upon him, sought to obtain, outside his ordinary sphere of life, by imbibing from external objects a larger amount of that pleasure—which was mere excitement, this unnatural pleasure, or excitement gradually brought retributive suffering, morally and physically, and thus created in and by himself the first germ of disease, due to the

depression which constantly follows excitement. And thus commenced, by man's own act, that process of defective Brain power, which has been transmitted from generation to generation, in which successive generations a predisposition has been generated, which when aided by external exciting causes produces visible disease. Thus it is quite obvious that if the force of the fountain head, or the reservoir becomes low, shallow, or impure, the branches or streams supplying the various depôts or organs of the body, must likewise be impaired: that when the fountain head or reservoir is rendered partially unfit for supply, the various organs are supplied with depressed nervous force.

Man is fearfully yet wonderfully made; we may examine the working of the whole machinery of man: we may examine and analyze the various secretions of the Liver, Stomach, and Pancreas, and tell their functions, but when we look to the Brain, the medium through which our mind operates, we are at a complete loss, here the physical of our nature ends, and commences the distinction between the lower animals and the mind of man,—here begins the compound or double nature of man.

The bird may build her nest, and the ape look after its mate, but who has ever seen any deviation from the laws of their nature: as was the nest of the bird in the beginning, so it is now, and will ever be without alteration or improvement—and who has ever known the ape to change its nature, it was an ape to begin with, and it will end an ape. But the mind of man is ever changing, and as the Book says “man has sought out many inventions,” yes, and is ever improving and expanding his capacities—is ever diving into the deeps and bringing to light riches and wealth—he soars aloft and examines and records various things relating to the starry heavens—the

thoughts of man's mind may, by his ingenuity be recorded upon paper, which may be read, in after ages, by his followers—the wildest of the lower orders may be subdued, but who can chain the mind of man! We must pass on.

In this, the latter part of the nineteenth century, civilized society is living far too fast; but very few indeed estimate the bad effects produced by a life of such rapid speed, especially when the young continue habitually to live in such an atmosphere of excitement so fatal to the higher and deeper life. The subtle poison which is infused through the whole system, saps the foundation and strength of the mind, and daily exhausts and destroys the sensitive organization of the Brain; thus slowly but by sure gradations, carries them towards a mental and physical condition which may justly be pronounced unsound. It will thus be seen that the body becomes exhausted by the lack of Brain power. The following analogy will illustrate the above: the grand orb of day, (the sun,) by the fiat of the Omnipotent Creator, influences the whole material universe so far as the solar system is concerned. So the power of the Brain affects the whole of the complicated machinery of the human body. Or, in other words, what the influence of the sun is to the material world, so is the influence of the Brain to man's physical nature. For instance, the whole creation depends upon the sun's influence, should that influence be diminished, the life, health, and vigour of the physical world must suffer proportionately. So, in like manner, exhausted or depressed Brain power, affects the life, health, and vigour of the human body. Thus over excitement produced by joy or sorrow, will, by depressing Brain power, debilitate a healthy system. The Brain may be weakened by continued study or physical exertion, exhaustion will be the effect. Now to restore the Brain to

its normal condition, it must be relieved from a portion of its labour before it can be accomplished. It will, therefore, be clearly seen that in order to cure disease we must have a correct appreciation of the Brain and nervous system, which is the most important study of the practitioner of medicine. The centre of life, of vitality, of existence is in the nervous centres, and in all diseased conditions there is impairment of these parts.

In support of this assertion we could refer to many forms of disease bearing on this point. Fever is known to be a condition of imperfect reaction, and is most successfully combated by administering such stimulants as assist the nervous centres and increase vital energy. Improvement in inflammation of the lining membrane of the bowels speedily takes place when the nervous system is thoroughly stimulated by medicines having a direct action on that organism. In Consumption, that terrible destroyer of our race, we have, at the commencement, an impaired, or weakened, or deteriorated nervous system, which is so common in our civilized condition, whether this condition is due to the vices of civilized life we do not say; but we do say that this impaired nervous system deteriorates nutrition, lowers the physical and mental growth of the system, impairs the fountains of life, impedes the formation of perfect blood corpuscles; thereby causing the albuminous white cell condition of the blood, and, afterwards the deposition of this albuminous matter in the Lungs, glands, &c.

The primary cause of cancer is traceable to a peculiar condition of nervous structure, under which a peculiar disease is elaborated in the blood. Asthma and chest affections are due, less or more, to impairment of the Brain and nervous system. Anemia, or deficiency of

red corpuscles in the blood, is generally due to want of tone in the nervous system. The red globules are by far the most important part of the blood, and a high state of mental vigour is conducive, above all things, to a healthy condition of that fluid.

The exciting causes of fever are the inhalation of poisonous gases, arising from decomposing matter, bad water, &c. People are attacked by such things in proportion to their powers of vital resistance, in proportion to the strength of the nerve centres; for it is only on an enfeebled or predisposed body that morbid poisons operate.

The chief characteristic effect of all poisons is on the nervous system, to destroy or induce partial death; but the blood and tissues of the body may become so saturated with the poison of a fever, that there may be an almost instant destruction of organic life.

When nervous power is depressed or weakened, by any cause whatsoever, the action of the stomach is enfeebled, and its power of secreting gastric juice is diminished, and we have one or more forms of disease produced. Excessive mental labour diminishes nervous influence and by this means debilitates the stomach and capillary system.

The world is more exacting in its demands from all mental labourers. Success in public, professional, and commercial life depends upon a more strenuous and exhausting toil, sterner concentration, and a more harsh and rigid sacrifice of the amenities of life than was formerly the case. The eminent lawyer, the physician in active practice, the minister, the politician, even the literary workman, and eager man of science, are now condemned to such an amount and severity of exertion which forces one after another to break down in, what

should be their prime of life, shattered, paralyzed, exhausted and reduced, prematurely, to inaction or senility. What study does for the ardent worker in science, and the learned professions, anxiety and solicitude does for the merchant and manufacturer. Physical and cerebral toughness are the prime requisites for success in life; thus this ceaseless and severity of toil gives the prizes of life to men of exceptional physique.

When the mind is over energetic, nervous force is withdrawn from the stomach, and that organ lacks power of digestion, consequently the body pines through want of nourishment—the blood does not receive that amount of nutritive blastema, necessary for the sustenance of the various systems or organs of the body—and all the functions of the body become, in turn, enfeebled, and the reaction is again on the nervous system, and there is further exhaustion, and if this state continues, nervous depression becomes greater and finally life becomes extinct.

Whatever be the external exciting causes of disease, in obedience to the governing law of man's nature, the primary effect is upon the Brain and nervous system. The patient has a feeling of heat or cold. The muscular movements are less under the control of their respective influences, become tremulous, spasmodic, or wearied, the functions of particular muscles ceasing. Hurried breathing on slight exertion; or it is maintained slowly and at intervals, and with long occasional inspiration and expiration—sighing. The heart is quick, palpitating; or languid and remittent in its beats; appetite craving, capricious, or lost. Secretions either hurried and increased; or sluggish and diminished. The body shows a partial waste or general emaciation; or becomes, locally or generally, preternaturally tumid or bloated. Alive to the slightest

stimulus, easily impassioned or depressed; the mind comprehending in its various relations every shade of unreasonable sadness or gaiety, prodigality or cupidity, vacillation or pertinacity, suspicious, cautious, or too confident security; with every colour of imagination, from highly intellectual conception to the dream-like vagaries and reverses of hallucination. Light and sound affect him, variably. Change in temperature affects him—the smallest increase makes the patient uncomfortably hot; the slightest breeze shivers and discomforts him; or, as may be observed in some cases of old age or imbecility, the patient may become equally insensible to excess or decrease of light, sound, heat and cold. And it is by predisposition, either inherited or acquired, by predisposition is meant, the readiness or fitness of one part of the body more than another, to be influenced or acted upon by an external cause; in this way, we all have our particular predisposition to one form of disease or another; but so long as our powers of vital resistance are sufficient—so long as our Brain and nervous system has sufficient nervous influence over the predisposed organ, the organ of our body which is thus predisposed will not be injuriously affected by any external cause; but when the power of vital resistance is diminished, when nervous force is depressed, then the organ predisposed will become diseased whenever excited by an external cause—be that cause whatever it may. Thus we have, according to the predisposition.

— “Maladies

Of ghastly spasms, or racking tortures, qualms
Of heart-sick agony, all feverish kinds,
Convulsions, epilepsies, fierce catarrhs,
Intestine stone, and ulcer, colic pangs,

Demoniac frenzy, moping melancholy,
And moonstruck madness, pining atrophy,
Marasums, and wide wasting pestilence,
Dropsies and asthmas, and joint racking rheums!"

MILTON.

In all diseased states of the system a cure is to be effected by the use of such medicines as promote vital power, and increase the amount of nervous influence. Dr. Buchanan says "a drug effects very little by its chemical or neutralizing influence; it is the amount of vital power that the drug imparts that is the true healer. The action of a remedy by which a diseased part becomes sound is a vital act of the body itself, aided by the remedy used, and the true secret in curing or healing is in the establishment of vitality—a vitality that tends to create, renew, or energize diseased tissue."

The primary effect of all drugs is on the Brain and nervous system, and through this system the various organs are affected either in producing an abnormal or a normal condition of the body.

It is the custom of some Medical Practitioners to treat the stomach as the cause of all disease, and apply an universality of treatment to that organ. They say restore the digestive organs to a healthy action and by that means restore the system to health and vigour; forgetting that unless we can first promote vital power and increase the quantity of nervous influence, we cannot establish and maintain a healthy action of the digestive apparatus. Digestion may be performed, but unless the nervous system is sufficiently vigorous, good blood will not be produced, so that in its turn will become a source of exhaustion to the Brain.

Seeing then that health depends, for its continuance,

upon the proper influence of the Brain and nervous system over the organs, and that disease is due to a diminution, or depression of nervous force, and having read of the very wonderful effects of the leaves of *Erythroxylon Coca* in sustaining vital force in the natives of South America who are in the habit of chewing these leaves, which they call *Cuca*, it occurred to me that these leaves would be of use in the treatment of disease. Knowing that disease was due to diminution of vital force, I tried its effects upon a few of my patients, and the effects were so wonderful in preventing that destructive metamorphosis and restoring them to a more normal condition, as to be truly marvellous. It is now many years since I first used *Coca Leaves* in the treatment of disease, and, with various modifications, it has been the means of restoring to health thousands of diseased individuals during that period.

Having so frequently witnessed the beneficial effects of my mode of treatment with various preparations of the leaves of *Erythroxylon Coca*, not only in the diseases expressly mentioned in the following pages, but in others also, whether occurring in children or adults, I have ventured to publish the present work, with the view of calling the attention of the general public to the subject.

CHAPTER I.

Physiology:—of the Brain and Nervous System—The process of Digestion—The Circulation of the Blood.

In order to make this book as useful and intelligible as possible, it is necessary to sketch the structure and manner of working of some of the various organs and systems of which the human body is composed. In considering disease it is necessary to contemplate the various systems as differently or similarly affected; the human body should be, both physiologically and pathologically considered. The body of man is composed, as it were, of different pieces of machinery, animated by a peculiar principle, each part performing separate functions, all which contribute to one great end. And it is only on an acquaintance with what takes place in the various processes, and of their adaptability the one to the other, that any sound doctrine of the art of healing disease can be based. And he, therefore, who does not know the workings of his own frame, is in ignorance of the most interesting and grand display of nature's handiworks.

The Nervous system is generally described as consisting of two parts, closely connected together: first, the *cerebro-spinal system*, and secondly, the *sympathetic ganglionic system*; each of these may be divided into nerve-centres,

and nerves diverging from these centres to supply the different parts of the body.

Nerves are made up entirely of a white matter called *fibrous* matter, supported in a connective tissue. Nerve-centres are composed of spheroidal bodies or ganglionic corpuscles, consisting of a soft semisolid cell substance, and mingled with nerve fibres; this mass is of a reddish grey colour, and is called *vesicular* or *grey nervous* matter.

Nerves are round and sometimes flattened cords, connected at one end with the nerve centres, dividing and sub-dividing, permeating and ramifying over the whole body; they are divided into two classes, according to their functions—the *motor* nerves are those which carry the mandates of the will to the parts they supply, so that muscles are instruments by which a motor nerve, excited by the central organ with which it is connected, is able to produce motion; and the *sensory* nerves, which carry back to the nerve centres the impressions made upon them by any excitant at the part over which they are distributed. The activity of these nerves is evidenced and becomes manifest to us as a state of conscious sensation—through the working of the central organ of the system—the Brain.

The Cerebro-spinal system consists of the spinal cord, brain, and the cerebral and spinal nerves proceeding from them. The centres of this system lie in the cavity of the skull and spinal column (the back bone.) The bony walls of which cavity are lined by a dense fibrous structure of considerable strength, called the *dura mater*. Closely investing these centres is a very vascular fibrous tissue, the *pia mater*. Interposed between these two layers is a very thin, delicate membrane, which is called the arachnoid membrane, one layer of which also coats the brain, and it being what is called a *serous* membrane, it

secretes, into its interior, a fluid called the arachnoid fluid. There are a large number of vessels which supply blood to these organs, after running for some distance in the pia mater they then pass into the substance of the brain or spinal cord, and it is from this blood that the Brain and nervous system derives its food, which is converted into nervous force.

The spinal cord is a column of greyish-white substance; it occupies the upper two-thirds of the spinal canal, extending from the commencement of the canal, where it is continuous, by a portion called the medulla Oblongata, with the brain, to about the first or second lumbar vertebre, that is, near the middle of the loins, where it tapers off into a filament. If a transverse section of this cord be made it is found to be composed of two substances, one, external, a white substance, the other, internal, a greyish-red substance. The white matter consists of nerve-fibres supported in a framework of connective tissue, and accompanied by blood-vessels, most of these fibres run lengthways. The greyish matter is composed of nerve-fibre and a number of nerve-cells.

From the sides of the cord are given off thirty-one pairs of nerves, each of which arises from two roots, one anterior the other posterior. Thus there are thirty-one pairs of anterior roots, and the same number of posterior roots, a certain number of anterior and posterior roots, on the same level on each side of the cord, converge and form anterior and posterior bundles, and then the two bundles coalesce into and form the trunk of a spinal nerve.

The anterior roots are motor; those of the posterior, on each of which is an enlargement or collection of grey matter—called a ganglion, are sensory. Therefore, each

spinal nerve is compound, having both motor and sensory functions.

The trunks of spinal nerves pass out of the spinal canal by apertures between the vertebrae, or small bones composing the *backbone*, and then divide and subdivide and ramify, for the most part, over the muscles and skin.

* If the roots of a spinal nerve be irritated in any way, either by pinching, galvanizing, applying a hot body, or cutting, two things occur: first, all the muscles to which parts of this are distributed, contract; secondly, pain is felt, which is referred to that portion of the body to which fibres of the nerve operated upon are distributed. Thus the effect of irritating the root of a spinal nerve which sends branches to the hand, is to cause pain to be felt in the hand, in the same manner as if the terminations of such branches in the hand were themselves directly irritated by some means. Therefore, generally, the effect of irritating the trunk of a nerve is the same as that of irritating the terminating fibres of a branch of such nerve. When a branch only is irritated, the only muscles directly affected, and the only parts of the skin to which pain is referred, will be those to which that branch sends nerve-fibres, and these effects will follow upon irritation of any portion of a nerve from its smallest branch up to the point of its trunk, at which point the anterior and posterior branches of root-fibres unite.

If only the anterior bundle of root-fibres be irritated, then the motive power only of the muscles to which that nerve sends fibres is lost, but no pain will be felt. Again, if the posterior ganglionated root-fibres be irritated intense pain will be referred to the part over which the nerve fibres are distributed, but none of the muscles receiving fibres from this nerve will be contracted.

Thus, the power of causing muscular contraction, which a spinal nerve possesses, is contained in the anterior root fibres; and the power of giving rise to sensation is contained in the fibres of the posterior roots. A sensory nerve is one, which, when active, carries an impulse to the central organ of the nervous system—the brain, and may be called *afferent*; and a motor nerve is one which carries an impulse away from the central organ, and is called *efferent*.

When a limb becomes paralysed it is because the nerves supplying it have been subject to some irritation, as pressure, &c., sufficient to destroy the nervous continuity; that is, the physical continuity is not broken as a whole, but only that of the conductor of the nervous influence. Voluntary power over, and sensation in the limb is lost, and these powers are only restored as the nervous continuity and conductive power return.

If the spinal cord be cut across in the middle of the back, (as when a man hurts himself by accident, the spinal cord is sometimes virtually cut into two), the legs and all the parts supplied by nerves which branch off from the cord below the section, will be paralysed, that is, they will be rendered insensible, and no effort of the will can make them move; while all parts immediately above the section will retain their ordinary powers. If the connection with the Brain be entirely severed, no sensation will be produced on irritation of a part of the body below the section and supplied with sensory nerves from the cord, yet irritation, such as tickling of the feet, will produce convulsive movements of the legs. Thus, though the connection of the spinal cord with the brain is severed, yet the spinal cord possesses the power of giving rise to excitement of efferent or motor nerves, when an

afferent or sensory nerve is irritated.

The nervous influence which keeps up the tone of the blood-vessels, which keeps them in the usual condition of normal contraction and dilation, proceeds from the spinal cord.

Connected to the spinal cord by the *medulla oblongata*, which passes insensibly into, and in its lower part has the same structure as the cord, is the chief centre of the nervous system, the Brain. Its comparative size is much greater in man than in any of the lower animals, its absolute size is greater than any save those of the elephant and whale. Its usual weight in the male is about 50 ounces, in the female 46 ounces.

The medulla oblongata is about the same thickness as the spinal cord, at its junction with that centre; above, however, it widens out, and its central canal spreading, becomes a wide cavity, this cavity, is called the *fourth ventricle*. Over hanging the fourth ventricle is a laminated mass, the *cerebellum*. On each side, this organ sends down several layers of transverse fibres, which sweep across the Brain and meet in the middle of its base, in such a manner as to form a kind of bridge, called the *pons varolii*, in front of the medulla oblongata. The fibres of the medulla oblongata, which run in a longitudinal manner, pass forwards, among, and between the layers of transverse fibres just mentioned, and become visible in the front of the bridge, as two broad and diverging bundles, these are called *crura cerebri*. Immediately above the *crura cerebri* lie four hemispherical elevations of nervous matter, called *corpora quadrigemina*, a narrow passage which leads from the fourth ventricle to the third ventricle passes between the four elevations and the *crura cerebri*, this third ventricle is a narrow cavity lodged between two great masses

of nervous matter, called *optic thalami*, into which the crura cerebri pass. Connected with the membrane of the roof of the third ventricle is a small body of unknown functions. The floor of this ventricle also ends in another anomalous organ. The third ventricle is closed in front by a layer of nervous matter; beyond this, on each side there is a small opening in the boundary wall leading into what is called the *lateral ventricle*, which occupies the centre of the cerebral hemisphere. Each hemisphere is enlarged backwards, forwards, and downwards into as many lobes; and the lateral ventricle presents corresponding prolongations.

The *Corpus striatum*, is a striated mass of nervous matter forming the floor of the lateral ventricle.

The Hemispheres, from their size, overlap all other parts of the brain, and, in fact, in the upper view entirely hide them. They are, inferiorly, joined by a mass of transverse fibres, but their applied faces are separated by a deep narrow depression. The external surfaces of the hemispheres are marked out by numerous deep fissures into convolutions. The arrangement of the white and grey matter in the medulla oblongata is similar to that of the spinal cord; the white matter being external, the grey internal. In the optic thalami and corpora striata the matters are intermixed. In the cerebral hemispheres and the cerebellum, the white matter is internal and the grey matter external.

Twelve pairs of nerves are given off from the underside of the Brain. The following are their names and functions:—

The first pair are the *Olfactory* nerves, which are composed of pale flat fibres, and are distributed over the Olfactory mucous membrane, and are the nerves of smell. The *second* pair are the *optic* nerves, which pass into the

eye near the inner or nasal side of the ball, when its fibres radiate upon the retina, and constitute the nerves of sight. The *third*, *fourth*, and *sixth* pairs are distributed over the muscles of the eye, and are the motor nerves of the eye-ball. Each nerve of the *fifth* pair is large and compound, resembling the spinal nerves. It has two roots, a sensory, having a ganglion of nerve matter, and a motor root. It supplies the skin of the face and the muscles of the jaws, and is called *trigeminal*, because it has three divisions, one branch, the *gustatory*, supplies the front of the tongue. The *seventh* pair, called *facial* nerves, supply the muscles of the face with motor nerves. The *eighth* pair pass through the bone of the skull, and are distributed over the membranes of the ear, hence they are called *auditory* nerves. The *ninth* pair, the *glossopharyngeal* nerves, supply the back of the tongue, thus being nerves of taste, they are also distributed over the upper portion of the throat, supplying this portion with motor nerves. The *tenth* pair are the *pneumogastric* nerves. This pair is the most widely distributed of any of the cranial nerves; it arises from the medulla oblongata, and is mainly the sensory nerve supplying the organs of voice, the lungs, the liver, and the stomach, branches are also connected with the heart. The *eleventh* pair, or *spinal accessory*, arise from the spinal cord, between the roots of the spinal nerves, and are motor nerves, supplying some of the muscles of the neck. The last pair, the *twelfth*, are motor nerves and are distributed over the muscles of the tongue.

The medulla oblongata is an extremely important part of the cerebro-spinal system. First, it may, like the spinal cord be regarded as a conductor of impressions; its modes of conduction may be considered similar to those of the cord. The decussation or crossing of part of the fibres of the

anterior pyramids, or front part of the medulla, and there crossing into the lateral tract of the opposite side of the cord, make it probable that impressions proceeding from the brain, would, by traversing one pyramid, pass across to the opposite side of the spinal cord. Hence, if the nerve fibres of that part of the medulla oblongata which carries motor impulses from the brain, and situate at any point above the crossing of the fibres, be injured, paralysis of the part of the body and limbs, opposite the injured side, occurs. Secondly, as a nervous centre, the functions of the medulla oblongata, are necessary to the maintenance of life, because from it issues the nervous force necessary for the performance of Respiration. Therefore, extensive injury to the medulla causes the respiratory movements to cease, and, in other cases, if the roots of the pneumogastric nerve be irritated, death supervenes by stoppage of the heart's action. Respiration and life may continue, though the upper part of the brain be removed, if the medulla is uninjured and in connection with the respiratory nerves; but there will be no appearance of sensation or will. The movements are involuntary and unfelt: therefore the medulla has no claim upon our attention as a seat of sensation, or an organ of the mind.

The cerebellum appears to be the organ for combining the actions of the muscles; for if the cerebellum be diseased or cut away, a want of harmony in the motion is the result. It is the regulator of motion: the loss of regular motion appears to be in direct proportion to the loss of the cerebellum. Every severe wound of this part of the brain totally prevents progression and generally developes a retrogressive action. A duck from which a portion of the cerebellum had been removed, could only swim backwards, and made no progressive action for eight days. When the

cerebellum is entirely removed, the power of regular movements is entirely lost, although the senses of sight and hearing, and the will to act remain. The cerebellum seems to have the direction of such instinctive and habitual movements as do not require the exercise of deliberation, judgment, memory, or any other intellectual act. A soldier, for instance, who has acquired, by constant practice, the habit of immediately putting himself in the attitude of "attention" on hearing the word of command, will do so, in time, as soon as he hears the sound of the word, whether he be thinking of it or not, it has become so thoroughly embodied in the man's nervous structure.

These organs of the Brain, constituting its lower part, are the *cerebral* or *sensory ganglia*, and there is every reason to believe that they constitute the real *sensorium*.

The active part of the cerebrum may be said to consist, to a very large extent, of the grey matter which is spread over its surface as a film; and is deeply folded upon itself, forming what are called *convolutions*, thus giving it a much more extensive surface, and lies immediately under the skull-cap.

The cerebrum appears to be the part through which those phenomena termed intelligence and will, become manifest; in fact, it may be regarded as furnishing the mechanism of our thoughts; not that it does the whole work of thinking, but it furnishes the machine through which our thoughts work. It is not the steam engine that does the work, the steam engine is merely the instrument, through which the force, supplied by the heat under the boiler, becomes manifest in the work done; if we go back to the source of that heat, we find it originally in the light and heat of the sun by which the trees were made to grow, from which trees coal was pro-

duced; it is known that if we place plants away from the sunshine and light they will not grow, it is the sun-light which enables them to take in their food, therefore we may say that a portion of the heat of the sun is actually bottled up in the coal for our use. In the same manner the brain serves as the mechanism of our thought.

The mind is not necessarily dependent on the brain for its existence, in the same manner as force is not dependent for its existence upon the instrument; but the mind is incapable of external manifestations, or of knowledge of external things, except through the medium of the Brain and the nervous system connected therewith; the mind may remain unchanged in case of injury or disease of the Brain; but, its external manifestations, and all its acts performed in connection with the brain would be hindered or disturbed; as, pro exempli, the work of a steam engine may be stopped by the breakage of a part of it, yet the force—heat—is not destroyed, though it cannot be manifested in the working of the machine. Again, the work of an artist may be stopped or spoiled through deficiency or badness of his implements of art. But when the engine is repaired and continuity regained, then, the force will become manifest. Thus when the instrument—the cerebrum—is injured by disease or otherwise, the mind becomes, as it were, paralysed; it cannot operate and express itself, owing to a break in the continuity, when that continuity is restored, then, the mind shows itself by its operations, and we become conscious of what is going on around us.

Connected with this convoluted grey matter is a white mass of nerve fibres, which appear to act as conductors, establishing communication between the grey matter of the cerebrum and the organs composing the base of the brain—constituting the sensorium, and the changes which take

place in the grey matter only rise to our consciousness—only call forth our conscious mental activity—when the effect of these changes is transmitted along these white fibres downwards to the sensorium.

The SYMPATHETIC SYSTEM consists chiefly of a double chain of ganglia—that is, swellings at various points in its course, formed by the presence of bundles of nerve cells, lying at the sides and in the front of the spinal column, and connected with one another, and with the spinal nerves, by filaments passing from the ganglia. From these ganglia branches also proceed, which follow the course of the blood vessels, and form great plexuses or networks by the nerves interlacing, over the heart and about the stomach. The sympathetic nerve influences the muscles of the vessels generally, but, especially those of the heart, intestines, &c.; it also appears to regulate the secretions and movements of the various organs over which it is distributed. Some of these, however, such as the heart, lungs, and stomach, receive also nerves from the cerebro-spinal system, and are, therefore, not exclusively under the influence of the sympathetic nerve system. This is especially the case in regard to the heart and stomach; the movements of the former organ being greatly influenced by the state of the mind. Excessive fear may so far disturb its action as to diminish considerably the force and number of contractions, and in some cases the emotional influences are such as to entirely suspend the movements of this organ. The stomach is also greatly influenced by the state of the mind.

PHYSIOLOGY OF DIGESTION.

In the science of Physiology, few subjects have a deeper interest or are more studied by the popular mind, than the process of digestion. Persons who never think of

analyzing any of the other processes of animal life manifest a great interest in the function of digestion, and generally seek to acquire information regarding the nature of the food they eat, and the manner in which the food is metamorphosed into living tissue to supply the wear and tear of the body. The process in that most complete chemical laboratory—the stomach, and the part it plays in the animal economy, presents most attractive features to those who value their health.

Our bodies are made up of a number of different organs and tissues. In the first place there is the heart, the central pump, which distributes the blood through its vessels. Then there are the lungs, which purify that blood. Then, again, there are the stomach and bowels, which prepare the food, and gradually turn it into blood. And lastly, there are the brain and nervous system, which regulate the working of the whole frame.

Our bodies have been compared with the steam engine, there is a certain similarity in the manner in which the one and the other fulfil the assigned work. What takes place in the steam engine? Fuel is put into the furnace, the water in the boiler is heated, and expands into steam; the piston then works up and down, and the whole machinery is set in motion by the combustion of the fuel or coal which is put into the furnace. The same thing takes place in our bodies. We eat food which passes into the stomach; by means of that food we are kept warm, the nervous and muscular forces are developed, and we are set working as in the steam engine. There is one important difference between the two. The burning of the coal in the furnace has a tendency to wear out the sides of the boilers; the passage of the food also has a tendency to wear out its coats; but, this wear and tear is renewed by the food we take, which is

not only to supply warmth, but, also builds the body and repairs its waste; in the case of the steam engine, however, we cannot throw pieces of iron into the boiler, that they may be converted into a new boiler, but the engine must be stopped before we can put in new parts. Thus our bodies, in mechanism, far surpass the steam engine, inasmuch as they are self-repairing.

By chemical methods, food can be separated into its constituent elements, beyond which it cannot be divided. These elements are principally Carbon, Hydrogen, Oxygen, and Nitrogen. The latter three are gases, the first is solid. These elements when combined together, chemically, form solid articles of food. Carbon, I have no doubt you—readers—have all seen in the form of charcoal, it also exists as the diamond. Oxygen exists in the air, and constitutes one fifth of its volume, the other four fifths are nitrogen, the presence of the latter is to act as a diluting agent, in the same manner as water dilutes brandy. Oxygen is a great supporter of combustion. But, you may ask, by what agency are these elementary substances brought into the condition of food? It is done by plants. As plants do not possess the power of travelling in search of food, it is necessary that the food should come to them. It does so after this manner: the elements have a natural tendency to combine, oxygen combines with carbon to form carbonic anhydride; oxygen also combines with hydrogen to form water; and nitrogen combines with hydrogen and forms ammonia. Ammonia is present in large quantities in the soil, and the value of manures is dependent upon the amount of ammonia in no little degree. Carbonic anhydride is also present in the air. And upon water, carbonic anhydride, and ammonia plants are able to support themselves. The carbonic acid is absorbed by the leaves of

plants, they decompose it, and absorb into their structure the solid carbon, setting free the oxygen. Likewise with the ammonia and water, they store them up after entering them into new and various combinations. Thus plants prepare food out of the soil.

We know that animals feed upon plants. Wheat and flour, and oatmeal, and things of that kind consist of the same elementary materials as the flesh of animals. In animals we find *albumen*, it is also a constituent of wheat, and is that substance which forms the white of egg; and in every thousand parts of blood, there are 70 parts of this albumen. *Fibrine*, is a constituent of meat, and the coagulation of blood is due to the presence of it. Vegetables also contain it. Another principle of food is *gluten*, which is very much like the *fibrine*. *Caseine*, the curd or coagulable part of milk, an important ingredient of cheese, is found in peas, beans, and nuts.

Food may be divided into three great classes. 1st food that goes chiefly to warm the body. 2nd food that goes to build up the tissues of the body. And, 3rd mineral food. The first are made up principally of Carbon, Hydrogen, and Oxygen; in oils, starch, sugar, and all that kind of food, the three elements are present; food of this kind is the most warming.

After burning a candle it is no longer grease, but that substance has been decomposed into carbonic anhydride and the vapour of water, which are diffused through the air, an amount of heat is liberated by the decomposition which to a degree, raises the temperature around the flame. Exactly the same kind of process takes place in our bodies. All through the animal frame, in the blood, and the various tissues, a large quantity of this carbon is present, also a quantity of hydrogen, much of which has entered the

system as fatty food. Through the medium of the lungs, oxygen becomes diffused through the blood, whenever and wherever this oxygen comes in contact with carbon and hydrogen, carbonic anhydride and water are formed, and, resulting from the union, a certain amount of heat is liberated. It is a continual necessity that we take such food as meat, starchy matters,—as flour, rice, sago, and sugar. It is necessary, in order to build up the body and supply the continual waste of the tissues, that we eat an amount of such food as contains the element nitrogen. Fatty and starchy foods are *chiefly* used for warming purposes, likewise they materially assist in the repair of the continual waste; so with nitrogenous foods as milk, cheese, &c., they not only are converted into flesh, but they help to warm the body. Then there is the mineral food; it may appear strange to most of our readers, but it is nevertheless true, that, to properly build up our bones, muscles, &c., we require a certain amount of mineral elements and compounds, as soda, potash, lime, iron, phosphorus, sulphur, &c., but, happily, these are supplied to us in our ordinary food.

The process of digestion is to separate the soluble from the insoluble part of the food that we take to supply the necessities of our bodies, the soluble part is absorbed into the system, the insoluble part is carried away to be reconstructed in nature's laboratory, and after this reconstruction it is again presented to us as food. Of the complicated apparatus constituting the digestive organs, the mouth, being the first receptacle for the food, may be now considered:

The mouth is a cavity with a moveable bottom or floor consisting of the tongue and lower jaw, there are 32 teeth in this cavity, arranged in two rows, sixteen in each row.

The moment food is entered into the mouth, its temperature is rendered more nearly like that of the body, then it is moved about by the tongue, and is reduced by the teeth to more minute particles, by the process of crushing and grinding, which process is called chewing or mastication. While this chewing is going on, the food is mixed with a fluid called saliva, which is poured out on each side of the mouth by three little glands, one of which is situate under the ear, the other two are under the tongue. These glands bear a resemblance to the kernel of a walnut when the shell is removed, they are hollow; the cells of which the glands are composed are also hollow. It is from the interior of these glands that the watery secretion called the saliva is poured out. This secretion is not merely poured out, but is prepared by these glands. The little cells which compose the extremities of these glands derive their nourishment from the blood, and as each cell reaches maturity it bursts, and the fluid which we call saliva is poured out, they are capable of very rapid formation, and supply three or four pints of fluid daily. The saliva is a viscid fluid, consisting mainly of water, containing a little albumen and some salts. The object of the saliva is not merely to assist in forming the food into a pulpy mass, but it induces a particular chemical change. When we chew a piece of bread, and turn it over in the mouth a few times, it acquires a different taste, and becomes much sweeter, this change is due to the action of the saliva on the starch contained in the bread, a part of which is converted, by the chemical action of the saliva, into sugar. Starch is insoluble, sugar is soluble, hence the importance of well chewing your food, before swallowing it. The rapidity with which a considerable number of persons take their meals, very much decreases the amount of support which

is obtainable from their food.

The next point to be considered is the manner in which the food is passed into the stomach from the first receptacular organ—the mouth. After undergoing the process of chewing, and the chemical change which converts the starch into sugar, it is then ready to be swallowed. The food is now rolled together into a ball by the combined action of the tongue, cheeks, and lips, and delivered over to deglutition. Leading from the stomach towards the mouth is a muscular tube called the gullet, or œsophagus; at the upper part of which is placed a kind of funnel shaped bag, the pharynx. But, this, however, is only one passage out of three, which exist at the back of the mouth, and all lead in different directions; the second passing down the front of the food-pipe into the wind-pipe leading into the lungs; the third opening that presents itself being directed upwards and forwards into the nose. You will naturally ask “what guides the food into its proper channel, and prevents it taking the wrong course?” Immediately at the top of the wind-pipe, is placed a little valve—the epiglottis, which, during the process of swallowing, falls down and closes the opening of the wind-pipe, rendering the passage of food to the lungs, under ordinary circumstances, impossible. Sometimes, however, by accident or otherwise, it may happen that a crumb of bread, or a drop of fluid, passes down the wrong passage. This takes place when we attempt to laugh, sneeze, or cough, so as to open the epiglottis at the moment that something is passing. Next, the food is prevented from passing into the cavity leading to the nose by a moveable fleshy curtain, called the soft palate, which if destroyed, as in some cases, a part of the food comes back through the nose. If during the act of swallowing, we burst into a fit of laughter, this

barrier will be overcome, and some of the food will be expelled through the nose. Well, the food having been carried to the back part of the mouth, other apertures being closed, it is grasped by the muscles of the gullet, and carried down to the stomach by means of the muscular action of the two coats of the œsophagus. The first part of swallowing is voluntary, but after it reaches a certain point we lose all control over it, as you may have noticed when you have unintentionally swallowed a plum-stone. The food has now reached the stomach. What is the structure of this organ? It consists of three coats. 1st the external one, which is a part of the general serous lining of the abdomen, the use of which is principally to afford facility of motion to the organs, so that they may be able to adapt themselves to their different degrees of distension, and move one upon the other with ease. This membrane is of a white colour, and invests the whole of the organs of the abdominal cavity, taking different names according to its position. The second coat is muscular, and consists of sets of fibres running in various directions; a large one passes longitudinally, from one end of the organ to the other, and appears to be a continuation of the longitudinal muscular fibres of the gullet, another set run transversely, and a third obliquely. By the joint action of these fibres the stomach is able to contract and lessen its diameter in various directions.

The third and internal coat is called the villous, or mucus. Now the moment the food enters the stomach, it stimulates the nerves spread over that organ, its muscles begin to contract, and the whole organ commences a sort of churning motion, first from left to right, then from right to left. The inner coat is covered by a number of little depressions, opening into which are

numerous little tubes; when the food enters the stomach, these little tubes are likewise set in action by the stimulation of the nervous fibres of the stomach, and a very peculiar juice, extracted or prepared from the blood, called the gastric juice, enters the stomach. The principle of this gastric juice is called pepsine, it has a peculiar influence upon the flesh-forming portion of our food—an acid, probably hydrochloric, is also present in this fluid. The gastric juice mixes with the food, and together with the motion of the stomach, reduces it to a soft consistence, similar to that of pea-soup. A part of this pulp enters the vessels of the stomach and is directly conveyed to the blood.

The part of the starchy matter of our food which is not rendered soluble by the action of the saliva, is changed by the action of the stomach and gastric juice—likewise the nitrogenous part of the food also. After remaining in the stomach for some time, that portion which is not absorbed in the stomach, passes into the bowels, through the opening called the pylorus; the bowels, or continuation of the stomach, consist of a long tube average about twenty four feet in length, the first part of which is called the duodenum. Into this part of the bowels two tubes enter, one from the liver, bringing the bile, the other from the pancreas or sweetbread. Under the liver is situate the gall bladder. When the food leaves the stomach and enters into the duodenum it is called chyme, and is in an acid state, but during its journey through this tube being mixed with the pancreatic juice and the bile, it is rendered alkaline. The fat of the food, when it comes from the stomach is but little changed, but the alkaline mixture contained in the duodenum emulsifies the fat and renders it soluble, and fit to be taken up in the bowels;

the food is now called chyle. During its passage through what are called the small intestines, a separation of the food takes place, the nutritive particles are sucked up and carried into the current of the blood. The internal lining membrane of the intestine is covered by an immense number of hair like projections—called villi, in each of which is an artery, a vein, a nerve, and an absorbent vessel. These absorbents open when there is chyle in contact with them, probably in consequence of the stimulation imparted to the nerve, which brings more blood to the artery, and a kind of erection takes place. The food that these villi have absorbed, is carried away by a number of tubes, called *lacteal* vessels. These lacteals discharge the food they convey into a number of kernel like projections, called the mesenteric glands. In passing through the number of little passages contained in these mesenteric glands, which passages are lined with a number of small cells, a portion of the food is again changed into a number of very minute raspberry like bodies. This changed chyle is now allowed to pass into a duct called the thoracic duct, by which it is conveyed into the blood.

We have now traced the food, from its entrance into the system, till its nutritious particles are removed to form a portion of the tissues of the body, but we have still the excrementitious portion remaining behind. This, however, is speedily carried away. Having been passed by the peristaltic motion through the three small intestines, it is admitted into the commencement of the large intestine. Here we have a dilatation of the canal, together with a valve-like structure; the latter allowing substances to pass from the small intestine to the large, but preventing all return, and the former constituting a kind of bag, called the cœcum. This is situated on the lower side at the bottom part of the abdomen. The

direction of the colon or large intestine, is upwards and a little backwards to the false ribs, at which point it is turned out of its course by the Liver, and it then forms a large arch by passing along the cavity of the trunk, and above the small intestines. Having reached the walls of the trunk on the left side, it is again bent out of its course, and descends downwards in front of the kidneys. Its course on this side is not so direct as on the other ; for near the pelvis it forms a double curve, having something of the appearance of the letter S. It afterwards dips down into the pelvis, forms the rectum, and terminates in the anus.

When the excrementitious matter has accumulated in sufficient quantity, the rectum is stimulated, and the sphincter muscle, which exists at the mouth of the rectum—the anus, relaxes, the abdominal muscles contract, which has the effect of pressing on the intestines, and the excrementitious matter is forced away from the system.

Having traced the nutritive matter of our food into the torrent of the circulation of the blood, we will now examine the manner in which it is conveyed into the various tissues and organs of the body.

THE CIRCULATION OF THE BLOOD.

In order the better to understand the manner in which the blood is circulated (to supply with nutriment the tissues and organs) through the body, a brief description of the organs concerned may be here given. These are the heart, arteries, a minute class of vessels called the capillaries, and the veins.

I.—THE HEART. The heart is situated almost in the centre of the breast, between the lungs, a considerable portion of it is covered by the breast bone, the apex

however, inclines a little to the left side, where its movements may be felt between the fifth and sixth ribs, this is probably the reason why persons have come to the conclusion that the heart is much more to the left side than it really is. A pretty correct idea of the size of your heart may be obtained by doubling your fist. It may, with considerable approximation to the truth, be stated that the size of a man's heart is generally the size of his closed fist; and, as peoples' fists are usually proportioned to their size, so are their hearts. The shape of the heart is pretty generally known, so that I need not describe it. On looking at the outside, one might suppose it to be a solid organ, however, this is not so, it is a hollow muscle, down the centre of which runs, from top to bottom, a partition wall, which entirely separates the right side from the left; each side is further divided by a partition stretched across it. Owing to this partition in each side of the heart are found two chambers, an upper chamber and a lower chamber, the upper chambers are called *auricles*, the lower chambers are called *ventricles*. In the partition on the right side of the heart, there is an opening—the tri-cuspid valve, which allows the blood to flow from the upper chamber into the lower chamber, but not conversely. Although the blood is not permitted to flow back into the upper chamber, yet, it finds egress through an opening which is situate in the roof of this—the right ventricle—which opens outwards, and communicates directly with a tube which sends off branches to both lungs, the object of which will be afterwards described, at this opening three pouch like valves, called *semilunar valves*, are placed to prevent any return of blood. The left side is in every respect like the right side of the heart, except that the aperture leading from its upper to the lower chamber

has two leaf-like lids instead of three, and is called the mitral valve.

II. THE ARTERIES. These are tubes which convey the blood *from* the heart to the various organs and tissues of the body. They are large tubes distributed throughout the entire system, in a similar manner to the mode in which pipes convey water from the great reservoirs of our towns to supply the wants of the inhabitants; they commence in the heart, and, after dividing and subdividing ramify and traverse the whole of the various parts of the body, not excepting some of the hardest. They are made up of a number of coats, which are not made of some one substance, as gas pipes are made of lead; but, they are made of different materials woven together, one coat of which is elastic, another contractile, that is, the one is capable of being stretched by the flowing blood and again contracts, the other tissue contracts without being pressed outwards. These coats are influenced greatly in the performance of their functions by the force supplied to them by the brain and nervous system. The state of contraction and dilatation of the arteries is regulated like that of other muscles, by their nerves; the nerves thus determine whether the passage through these tubes should be wide or narrow, or free or obstructed. Besides these two coats, the interior of the arteries is lined with a layer of small cells, which allow the blood to flow smoothly over them.

III.—THE CAPILLARIES. The ancients, after following the blood vessels until they became invisible to their unaided eyes (they did not possess that invaluable instrument—the microscope,) came to the conclusion that they must have terminated in small open mouths. And from these little mouths they thought blood was poured into the tissues, so that they might help themselves to what they wanted.

Nature, however, does not do her work after this fashion. After they become invisible to the naked eye, the arteries still pass on for a certain distance as such, still possessing the three coats, they then empty themselves into a network of minute tubes with very thin single walls, which frequently anastomose or run into one another. They vary in diameter from 1-5000th to 1-2000th of an inch. The interspaces between the capillaries consisting of the substance of the tissue through which the capillaries permeate, are sometimes not wider than the diameter of a capillary, sometimes very much wider. In form, the capillary network varies, the more general forms being long and narrow, and at other times round, these capillaries are largely under the control of nervous influence. Branches of nerves from the organic nerve centres accompany every blood vessel, from the largest artery to the most minute capillary, and without direction from our will regulate the contraction and dilatation of these minute vessels. It is impossible to tell where the arteries end and where the capillaries begin, the process is so gradual that we are only capable of determining the one from the other by the difference in coats, the arteries having three coats, the capillaries only one, and this is composed of an exceedingly fine, transparent, and apparently homogenous membrane. It may be asked, how and where do these fine hair-like vessels end? Why, they pass into another set of vessels in a manner just as gradual as the arteries ended in the capillaries, and it is even of so gradual a nature that it is impossible to say where these fine vessels end and where their continuous vessels—called the *veins*—begin. And just as the arteries grow gradually smaller as they join the capillaries, so do the veins, commencing in the capillaries, grow in a continuous manner, larger and larger until they

terminate in the force pump—the heart. The veins, so far as their general structure is concerned, closely correspond with the arteries, and like the arteries differ from the capillaries in possessing several coats, with a smooth lining membrane in the interior for the express purpose of allowing the blood to flow easily along them. One great point in which they differ from the arteries is that they possess a number of valves, or at least all those veins possess these valves which are placed between or near muscles likely to be subject to pressure. Their object, like that of valves in general, is to prevent the blood from passing in an opposite direction to that which is intended to take. The margins of these valves are turned towards the heart, so as only to allow the fluid to pass towards that organ.

Let us now glance at the blood and the manner in which it circulates through the body to repair waste of tissue.

We have previously traced the chyle and its white corpuscles into the current of the blood, we will now look at the blood. Blood if allowed to stand for a short time will separate into two parts,—one part, a sticky jelly like mass, settles to the bottom, and is called the *clot*, the other is a thinish fluid, of a salt taste, and of a yellowish tint, this is called the *serum*. The clot is of a scarlet colour, a stream of water will, however, readily remove this colouring matter, which proves that there are two entirely distinct principles in the clot. One of which is the fibrous mass of the clot—and is called *fibrine*, and it is the presence of this fibrine that causes the blood to coagulate. This substance serves an important part in the economy of nature—it may be looked upon as nature's glue, for whenever we fracture a bone or meet with any injury, be it ever so slight a cut, &c., this fibrine is poured out to unite and bring the parts together. Let me here make one practical remark, let it be impressed

upon your minds that alcholic stimulants act upon it injuriously—they lessen its power of coagulating, thus persons that are in the habit of drinking such so called stimulants are very bad subjects for accidents. The colouring matter of the blood consists of a countless number of little red bodies, wonderfully minute little sacs or bladders, which float about in the blood and make the whole appear an even coloured fluid. In diameter, these corpuscles are about 1-3500th of an inch, in shape they are circular and depressed in the centre. The exterior of each corpuscle is denser than the interior, which contains a fluid matter of a red colour, called hæmoglobin. These red corpuscles are considered to be formed from the white corpuscles carried into the blood from the chyle. If we carefully examine one of these white corpuscles it will appear to have a smaller body inside itself. This smaller body—called a nucleus—has at times a pinkish colour. The corpuscle, in the blood, becomes somewhat enlarged and changed by the development within its interior of this nucleus, which is ultimately set free as a distinct red corpuscle, by the bursting of the sac or wall of the white corpuscle. The blood contains about 12 per cent of these globules. The serum or liquid part of the blood is composed of a number of substances dissolved in about nine times their weight of water, it is alkaline, and its principle constituent is albumen.

Besides the constituents already enumerated, others are found in the composition of the blood. Our tissues contain a considerable proportion of mineral constituents, such as lime, iron, soda, sulphur, silica or flint, phosphorus, and, indeed, many others. If these ingredients exist in the tissues it is natural to suppose that they are contained in the blood, because the tissues all derive their food from the

blood. It is quite natural that you ask the question, how do they get there? How, for instance, does such a substance as lime find its way into the blood? Well, lime does get there, but does not enter the blood as a solid, nor does it exist there in the form most generally known as lime, but it is dissolved through the blood, by the aid of various acids which are present in that fluid and the gastric juice, &c. Chloride of sodium, or common salt, is found dissolved in the blood. The red colour of the globules is due to the presence of a salt of iron. Likewise all the other mineral substances of the blood are held in solution by the chemical agency of such acids as muriatic, phosphoric &c. Therefore to supply these minerals—which are really food—to the blood, it is necessary that our articles of diet be well chosen. Not only does the blood contain mineral substances in solution, but likewise various gases are contained within it. Blood is capable of absorbing some gases in a much larger quantity than water can at the same temperature and pressure. The total quantity of gaseous matter contained in the blood is equal to a little less than half the volume of the blood, thus, 100 cubic inches of blood will contain nearly 50 cubic inches of gases. The gases generally contained are carbonic acid (about two-thirds), oxygen (one-third), and nitrogen (about one-tenth.) Thus in one quart of blood there is dissolved nearly one pint of these gasses in the named proportions.

We will now describe, in as few words as may be deemed consonant with definiteness of expression, the motion of the blood, its actual circulation through the vessels. Suppose the great veins of the body have just emptied their black blood into the right upper chamber—the receiving cistern—of the heart. The walls of this chamber immediately contract, and the black blood is passed into the right

lower chamber, the walls of this chamber press forcibly upon its contents, the valve which admitted the blood from the upper chamber is at once closed, and its cords stretched, the door in the roof instantly opens, and a swift current of the blood is carried along tubes which taper from a comparatively wide mouth and end in the fine capillaries of the lungs. The length of these vessels, if united, would extend for many miles, these fine tubes ramify over the whole substance of the lungs, and here, as it were, the blood is spread out to be purified, for by the action of the oxygen of the air, in these minute capillaries of the lungs, the blood is changed from the dark colour to a bright scarlet colour; after this change it returns to the left side of the heart—to the left auricle, the walls then contract, and it passes down into the left lower ventricle or chamber; it is then forced out, through the upper door of this chamber, into the great artery of the body, and is thus distributed and supplied to every organ and tissue of the body. In the course of this circulation the blood nourishes the body. The blood after leaving the heart passes into the arteries and from them into the capillaries, it is here that nutrition goes on. The walls or coats of these capillaries are composed of such material that matters can pass freely from the blood to the tissues, and, conversely, from the tissues to the blood, by a process called transudation. In the capillaries we have a fluid of one density, and in the tissues outside them we have a fluid of another density, and wherever two fluids of different density are separated by a thin animal membrance, there an interchange of material is set up, the thicker liquid passing somewhat tardily to the thinner, while the thinner liquid passes very readily to the thicker. In this manner the corpuscles of the blood exert their vivifying

influence, and the waste of the body is repaired. But in the capillaries another change takes place, the blood when it left the arteries and entered the capillaries was of a bright scarlet colour, now it is changed to a dark colour. This change is due to the fact that the red corpuscles give out a portion of their oxygen and take in its place a certain amount of carbonic acid, and it is in virtue of this process—which is a chemical one—that a large amount of the heat of the body is generated.

CHAPTER II.

DISEASE.

“Disease! thou ever most propitious power,
Whose kind indulgence we discern each hour
Thou well canst boast thy numerous pedigree,
Begot by Sloth, maintained by Luxury.
In gilded palaces thy prowess reigns,
But flies the humble sheds of cottage swains.
To you such might and energy belong,
You nip the blooming and unnerve the strong.
The purple conqueror in chains you bind,
And are to us your vassals only kind.”

Sir Samuel Garth, M.D.

Disease is the disorganized action of any part of the machinery of the body. Its primary effects, or more properly its primary obvious effects, are impeded or disordered functions; and of these the results are alterations of nerve structure, and various symptoms indicative of functional and structural changes.

Life is a condition of unending change, and this change is two-fold—first, a construction of the body from foreign organic materials; and second, a destruction of it into inorganic matter.

Where these changes sustain their equilibrium, the different functional actions of the various organs of the body are performed with perfect ease and comfort, and a sense

of well being. This is a state of health, which nature is ever striving to maintain in its natural condition. Whenever any bodily or mental function is not performed with just adaptation and proportion of parts, there is an interruption of this state, however slight the condition of health may be departed from. The first appearance of this slight disease, for such it is, is mere uneasiness. As the disorder proceeds, if it does proceed, from this slight beginning, the uneasiness or discomfort is succeeded by pain and various other attendant inconveniences, which are all symptoms of disease. Thus the slightest disordered action may produce only inconvenience; as nausea, trembling, &c., and increased disordered action will produce increased inconvenience; as vomiting, fainting, loss of sense, inflammation of the skin, with symptoms of pain. On this aggravated state changes of structure supervene, proportionate to the power of vital resistance.

Wm. Hitchman, M.D., D.C.L., F.R.S., says, "The bodily organisation of man and other animals possesses a peculiar property, called *excitability*—every agent acting upon it during life does so as a stimulant, physiologically, when they are duly exercised, produce the healthy performance of mental and physical functions, but when excessive—they produce nervous exhaustion—cerebral and spinal; in other words, there is direct debility of body and soul; when very deficient the morbid effect is really an accumulation of this same excitability, known as *indirect* debility. Now, from one or other of these abnormal conditions, or debilitated states arise loss of vital force, and consequently all those diseases which concern doctor and patient."

Consistent with the state of health, also are considerable varieties in the performance of certain functions. They do not interrupt health, so far as to produce even discom-

fort. The pulse of some individuals is never beyond fifty, and of others never below one hundred. In some the function of digestion is more rapidly performed than in others; and the intellectual force and promptitude of different persons is well known to be widely different, yet without disease. But when the food is not digested without discomfort and pain, or the circulation retarded or increased, or the mental movements not made, without similar results; when the appetite is lost, when there is fainting, when there is privation or other affection of any of the sensations or mental faculties; then there is disease.

Observation shows us that man is exposed to various circumstances capable of disordering his bodily and mental functions, and all these circumstances are so many *causes* of disease. They are found in the elements by which he is surrounded; in the food on which he subsists; in excess or defect of voluntary exercise; and in the nature of his mind, sensations, and affections. Man is also liable to connate, inherited, and acquired defects, and also to diseases due to the natural decay of his bodily frame.

Two things are necessary for the production of disease; a disposition in an organ to be acted upon, and a cause, capable of acting upon some organ. Two kinds or classes of causes are therefore required for the production of disease; first, a predisposing cause, and second, an exciting cause. This may be illustrated by the following:—One man is affected with typhus fever, and his neighbours escape. The exciting cause of the fever is supposed to be some peculiar poisonous matter in the air, generated by decomposing organic matter. But his neighbours have been exposed to the same peculiarity, and are not affected with fever. We explain this by saying that his power of vital resistance was not previously sufficient to overcome the influence of

the poison. This presumed disorder of his health, was, in this instance, the cause which predisposed him to the influence of the exciting cause. In the same way, half-a-dozen persons may be simultaneously exposed to cold and moisture, one becomes affected with sore throat, one with pleurisy, and one with rheumatism; and the remaining three may continue in health. The exciting cause was present to all, but a predisposing cause existed only in some of them, and was different in each of those in whom it did exist. There is in the system a tendency to throw off or get rid of any injurious materials that may be lurking in the body, and the violence of the malady will be in the inverse ratio to this power. The power, by which nature preserves the organism against the attacks of injurious materials, is called the *vis medicatrix naturæ*. Where this is powerful it considerably holds in check the exciting causes of disease, and sets up an opposing force against their action,—hence, some persons, although, to a certain extent predisposed to a particular disease, are not attacked or only slightly so, from the simple reason that their vital force is sufficient to overcome the exciting cause.

One of the most potent of predisposing causes, and one that is very deeply rooted, is termed *hereditation*. This is a tendency to a particular disease, engendered in the constitution of a child by its parents. Every one knows how susceptible an individual is to consumption of the lungs, whose parents have died of that malady. A tendency to scrofula, gout, numerous forms of skin diseases, epilepsy, insanity, asthma, and even disorders of the senses, such as partial or total blindness or deafness, will pass down from generation to generation more certainly than titles or estates.

Young women who have been more than ordinarily sub-

ject to hysteria, frequently give birth to children, who, at an early age, become the subject of convulsions. As these children grow up, if females, they too, become attacked with hysteria. Children born to them have to pass, in their turn, through the same phases that their parents had gone through before them. These tendencies are engendered in the constitution of the child before birth, and it enters upon life, with the sword of Damocles hanging over its head, to fall at any moment when a favourable opportunity occurs. All children born of the same parents do not suffer in like manner. Frequently, a whole generation may escape, and the tendency appear with redoubled force in the next.

Hereditation can scarcely be said to be the communication of a disease from parent to child, but simply the tendency to a disease. Nor will this tendency become developed until a series of favourable circumstances constituting an exciting cause, aids its manifestation. Thus a child inheriting from its parents the predisposition to gout, the malady does not appear until the individual has reached that age at which the constitution is most commonly attacked by that disease.

THE EXCITING CAUSES OF DISEASE.

The element to which man is chiefly and at all times exposed is air. Pure atmospheric air, is composed of two elementary gases, viz., oxygen and nitrogen, in the proportion of one volume of the former, and four volumes of the latter; thus there are in 100 parts, by volume, of air, oxygen 21, nitrogen 79; but, in our cities and towns, it is usually contaminated with other gases—such as, carbonic anhydride, water vapour, ammonia, nitric acid, and sometimes sulphureted hydrogen, together with various

miasma generated in damp places Its variable temperature, dryness, and moisture; its alteration of calmness and commotion, and also its various electrical states; immediately affect the surface of the respiratory organs and through the nervous system the energy of the whole body. Some of the variations seem to have a direct influence on the whole nervous system; thus in a thick, foggy, atmosphere, the electric fluid, which is identical with, and supports nervous power, is deficient; and we feel dull, drowsy, and languid. There are properties—morbid poisonous gases—in the air, which are largely concerned in the production of our common continued, yellow, and intermittent fevers, cholera, small pox, influenza, etc., no doubt can be entertained of the potent agency of such atmospheric influences in the production of the common eruptive disorders, and of the disorders characterized by a particular portion of the nervous system, the respiratory, and by spasm,—circumstances exemplified by the hooping cough. To the direct influence of the contaminating substances contained in the atmosphere, must be ascribed the variations and feelings of so many individuals in changeable states of the weather, and the suicidal despondency which is found to be induced by the oppression. The condition of certain structures of the body, and of their nerves, is seen in the course of the seasons to be materially affected by certain states of the atmosphere; the effects, being sometimes, apparently, only the result of temperature, as in colds, and obstructions of the respiratory and circulatory organs in the cold weather of severe winters; but at other times more obscure, as in irritability of the mucus membrane of the stomach and intestines in the summer and autumn of the year. The consequences are periodical dyspepsia, gastric fevers, diarrhoea, dysentery, and cholera. Of the diseases thus obscurely arising, some,

peculiar to particular localities are called *endemic*; others, appearing and disappearing with some regularity are called *epidemic*, and many of the latter become, under certain circumstances, capable of being communicated from one individual to another.

UNHEALTHY TRADES are a great source of diseases. The occupations of great numbers are frequently carried on in confined and ill ventilated buildings, where the mere assemblage of so many persons deteriorates the quality of the air: the effect of breathing this poisoned air is a common cause of disease. The influence of a high temperature, combined with excessive moisture, has been abundantly experienced in the diseases incidental to tropical climates. There are occupations in which light particles of foreign matter are mingled with the air and inspired; and also some where poisonous chemicals—are manufactured, or used, in various trades—which continually coming in contact with the skin produce disabling and acutely painful diseases:—such as, ulceration, inflammation, etc. The diseases produced by the inhalation of irritant poisonous particles, are first, Chest diseases—consumption of the lungs, bronchitis, asthma, etc.; second, diseases affecting the heart and blood—palpitation and irregular action of the heart, nervous derangement, extreme fluidity of the blood and anemia or deficiency of red corpuscles in the blood; third, glandular diseases—irritation of the salivary glands produced by mercury, and inflammatory degeneration of the membranous structure of the kidneys, produced by lead; fourth, the stomach and digestive organs—colic, gastro-enteric irritation and choleraic diarrhœa; fifth, Brain and nervous system,—vertigo, neuralgia, paralysis produced by lead, cerebral exhaustion induced by Bisulphide of carbon, cramps, spasms, etc.; sixth, Irritation of the eyes, and sometimes deafness.

Some colouring matters are very poisonous—especially that which is used so very commonly for imparting a green colour to paper hangings, ornamental papers—as writing paper and cards, for various ornaments connected with ladies dresses, artificial flowers, candles, &c.; I refer to Scheele's green or arsenite of copper. It acts both by absorption through the lungs and also through the skin. It produces disagreeable sores on various parts of the body, of those who use it in their daily avocations, there is also constant soreness of the eyes; the chest and throat are sore, there is cough, irritation and pain of the stomach, diarrhoea, &c. Dr. Hassal has pointed out that ball dresses coloured with this pigment are a source of danger to the wearer of the dresses as well as to the manufacturers of them. Likewise the atmosphere of a room whose walls are covered with paper containing this pigment is injurious to health.

In the QUALITY AND QUANTITY OF OUR FOOD AND DRINK are also found the causes of disease. Some kinds of food produce disorder by their stimulating properties, and some by otherwise producing departures from healthy processes. The most simple and evident causes are eating or drinking hot fluids and eating or drinking impure or badly cooked food, as also eating or drinking too little or too much. Hot fluids act by debilitating the nerve fibres of the stomach, thus the muscular power of that organ becomes impaired, and is rendered incapable of digesting *nourishing* food. Such things as tea and coffee, before being drank, should be rendered lukewarm by the addition of milk and sugar.

BAD FOOD. Certain kinds of food are difficult of digestion, and frequently “upset the stomach.” Fat meat, oily fish, smoked and salted meat or fish, are difficult of digestion. So are unripe fruits, rich cake, and pastry, these latter are full of butter or some kind of grease, which protects the fine flour

from the action of the gastric juice. Generally what will keep meat or fish from putrification, will also make it hard of digestion. Some persons cannot digest cheese—lobsters, crabs, and mussels disagree with others. The white portion of hard-boiled eggs is acted upon but slowly in the stomach, and fried eggs are worse. Frying makes albumen hard, tough, and greasy. New bread is also very difficult of digestion.

BAD WATER. The human body is four-fifths water; and of our most important parts—our blood, brains, and nerves—water forms a much larger proportion.

Water is thus a very important element. It dissolves our food; it conveys everywhere the elements of nutrition; it carries off the waste matter which would poison our life if it remained in the system; it pours out of the lungs with every breath; it constantly exudes from the millions of pores all over the body. Under certain conditions men can live for days and weeks without food; they quickly perish when deprived of water.

This water, so necessary to every form of life, should be of the purest and the best. Hard water—that which holds minerals in solution—is not so good to drink, or even to bathe in, as that which is soft and pure. It will not so readily dissolve substances, and is therefore less fitted to aid digestion, circulation, and purification. Foul water, containing either living or decaying vegetable or animal substances, is not nice to drink, and may contain the germs of fatal diseases.

Unfortunately the rivers of England have been turned into common sewers, carrying into the sea or spreading in the air matter which should enrich the land and make it fertile. They are made foul with the wash and waste of butcheries, stables, tanneries, glueworks, and various chemicals

from thousands of factories, paper mills, dyeworks, metal works, &c., &c. In too many cases this filthy water is pumped into reservoirs and, with very little purification, is distributed for the drink of great populations.

A large part of the water of the metropolis is pumped from the Thames, which is the common sewer of some millions of people living in towns on its banks above London. Some is pretty well filtered by the companies that supply it ; some so little purified that a drop placed under a microscope is seen to be crowded with vegetable and animal organisms. It is generally admitted that the water distributed to, and drunk in many towns, and even that drawn from wells, may be the cause of diarrhoeas, dysenteries, typhoid fever, and cholera.

OVER EATING. Eating too much food is a more frequent cause of disease than eating bad food. The stomach is overloaded, and its powers overtasked. It might be equal to a pound of food, whereas we give it two or three pounds. It is a physiological fact that just as much, and no more, gastric juice is secreted in the stomach as is sufficient to digest enough food to supply the necessities of the system, therefore, if more be taken than the stomach can digest, the remaining portion lies and turns sour, ferments and putrifies in that organ, thus becoming a great cause of exhaustion ; some people, however, live as though eating and drinking were the sole employment of their very existence, and the stomach entirely breaks down under the heavy tasks laid upon her. More food than is necessary, if digested, is a drag upon the system, and causes waste of life. Too much food produces as much mischief as too little.

IRREGULAR EATING is, doubtless, as frequently the cause of disease as intemperance in eating. The regular process of digestion becomes interrupted. Before the stomach is half

through with one lot, we give it another job. It must needs set to work again—secrete more gastric juice, churn and grind a new load, and so on, a-dozen times a day, with biscuits, cakes, buns, sweetmeats, &c., until it is completely disordered, paralysed, and disgusted, and its owners have sacrificed their health for the baby pleasure of tickling their tongues. This gluttony and intemperance in eating is equally injurious, physically and morally, as intemperance in drinking ; and we need not be surprised at the prevalence of Brain exhaustion and indigestion, in these HIGHLY civilised nations. The stomach needs rest as much as the brain and limbs. Eat your regular meals ; the grown man, especially as his bodily activity declines, and digestion grows feebler, may take his food at comparatively long intervals, but during the growing period, when every portion of the frame is in the full tide of vigorous life, the utmost limit between the meals during the active portion of the day should be four hours.

ALCOHOLIC DRINKS. Under this designation reference is made to spirits, wines, beer, &c., the use of which is a frequent cause of disease. When taken in what is called a *moderate* quantity, its action is to reduce the nervous control over the minute blood vessels, and thus vascular excitement is produced, the capillary or minute, hair-like, blood vessels are paralysed, and expanded with the flowing blood, hence the flushing of the countenance. With the disturbance of power in the extreme vessels, more disturbance is set up in other organs. In the ordinary natural condition, with each movement of the heart there is a certain degree of opposition offered by the vessels, when their nervous power is in perfect order, and the beat of the heart is moderated in degree and time. But when the capillary vessels are relaxed, the blood runs through them with greater

freedom, the heart works quicker, losing nothing in force, but with an enfeebled recoil stroke. The daily work of the heart, when in its natural condition, is equal to about one hundred and twenty-two tons weight lifted one foot high, but, when under the influence of alcohol, its daily work is sometimes equal to ten, fifteen, or even twenty tons weight lifted one foot, in excess of its natural work. The flushing observed in the cheek after imbibing alcoholic drinks is not merely extended to the visible parts, but the condition is universal. If the lungs, brain, spinal cord, liver, stomach, kidneys, or, in fact, any other organ could be exposed, the vascular engorgement would be found to exist in the same manner.

If the use of these drinks be continued, the functions of the spinal cord are affected, there is a deficiency of the power of co-ordinate action of the muscles, nervous control over certain muscles is lost, and the nervous power is more or less enfeebled generally. The muscles themselves begin to fail in their power, they respond more feebly than is natural to the nervous force, their structure becomes temporarily changed, their power of contraction reduced; sickness also occurs. If still the drinking is carried on to a further stage, the brain itself becomes affected, the controlling influences of the judgement and will are lost, the rational part of the man gives way before the emotional, and the mere sensuous animal instincts and sentiments are laid bare, the senses become in a state of carnival and chaos. The man still drinks, he soon becomes entirely overpowered, the senses are benumbed, voluntary muscular prostration is perfected, and sensibility lost. The heart still remains at its duty, and while it just lives, it feeds the breathing power. In this stage the man is dead drunk, reduced to a state infinitely worse than that of the lower animals. The

circulation and respiration keeps the mass of animal matter just within the domain of life, until the poison begins to die away, and the nervous centres to revive again.

Such is the outline of the action of these *pleasant* drinks. For a long time the organism will bear these perversions of its functions without *apparent* injury, but if repeated in any degree, too often and too long, a series of organic structural *changes* are the effects produced.

It has been asserted, and held for a considerable length of time, that alcoholic drinks by decomposition in the body raised the animal temperature, and that it is necessary to "take just a little drop to keep out the cold," but recent experimental research has demonstrated that alcohol acts merely as an *excitant*, that when taken into the body it is partly decomposed at the expense of the oxygen which ought to be applied for the natural heating of the body; that it reduces the animal temperature, and prevents the yield of so much product of decomposition as is natural, and necessary for the continuance of the organic life.

Muscles are undoubtedly more rapidly excited into motion by the nervous tumult induced by the alcohol, but the muscular *power* is actually diminished.

But very few persons who habitually drink beer, wines, or spirits, are exempt from injury, varying in degree according to the amount drank. As a cause of disease it gives origin to a very large number of afflicted persons, a great number of whom suffer from its effects even unto death, without suspecting from what they suffer. Some are carried off in their early manhood, others live to middle age, and some live just short of the first stage of old age. The diseases which are eventually produced by the habitual use of alcoholic beverages, when taken in what is considered a *moderate* quantity, are first a chronic decrease of nervous

influence over the circulating system, and thus producing arterial relaxation, increased action of the heart, and sometimes paralysis of the small blood vessels, palpitation is induced, the heart becomes enlarged, the power of the brain is very changeable. The constant excess of work thus entailed upon the heart, &c., renders the necessity for a frequent repetition of the stimulus to excite the various organs to hold up. As these changes in the circulatory system are advancing, deteriorations of the structure of the organic tissues are in active development. Of all the systems that suffer under the continued excitement and paralysis, the nervous and the digestive are injured most positively. When beer, wine, or spirit is taken into the stomach, the action of its alcohol is directly exerted upon the nervous system; and we have produced exhaustion, indigestion, and partial paralysis, enlargement and congestion of the liver and kidneys, sleeplessness, and *very* frequently consumption of the lungs.

The effects of intemperance in women (which I am sorry to say has greatly increased of late) are evidenced by its producing dyspepsia, tremulous tongue, with white or brown coating, bowels irregular in their action, sleep disturbed, hysteria and neuralgia, quick pulse, palpitation and uterine diseases. Victims of intemperance in married life are subject to frequent abortions. All sense of moral rectitude is deadened; and frequently no sacrifice is considered too great for the gratification of the morbid sensuous appetite. The effects upon her family are, if possible, more strongly marked; children born at the full period are generally puny and weak, predisposed to various diseases, which with a very small amount of certain exciting conditions produce actual disease.

If the effects of the so called stimulants taken to excess

by women be such that the uterine functions are affected, which cannot be denied, then we are not far wrong in saying that the moderate use has an effect which differs only in degree, and not in manner. Therefore, it is very probable that a large portion of our excessive mortality among young children, is due to the mal-nutrition of the child in the womb, caused by the use of alcoholic drinks. Therefore, let me suggest to mothers that they should abstain from taking any food or drink that is likely to interfere with the nutrition of their unborn children. It is a lamentable fact that sufficient attention is not bestowed upon the bodily training of our female population, and the proper regimen of women during the pregnant state.

According to ancient historical writings, we find the health of the mother and her demeanour during pregnancy, were considered to have no small influence on her offspring. Thus, in the Old Testament we read that "the angel of the Lord appeared to Manoah's wife and said, 'Behold, thou art barren and bearest not, but thou shalt conceive and bear a son. Now, therefore, beware, I pray thee, and drink not wine nor strong drink, and eat not any unclean thing; for, lo! thou shalt conceive and bear a son.' And the woman bare a son, and called his name Samson; and the child grew, and the Lord blessed him." Judges chap. xiii. An angel is here directing a woman how to conduct herself in the prospect of her becoming a mother; and is it not right that all women should follow the advice under similar circumstances? Mothers of unborn children, allow yourselves to be guided by the advice given to the wife of Manoah, let your diet be of a simple and nourishing kind, take proper exercise, and your general health will be the better for it, you will be better enabled to undergo the pains of child bearing, and your offspring, when born, will be sound and grow and wax strong.

Stimulating condiments. These condiments excite a false appetite, and induce us to eat too much, and depression follows. Tobacco is a virulent poison, and, therefore injurious. No doubt the after dinner cigar excites secretion and stimulates digestion—so does the glass of brandy. But by this very excitement, they gradually weaken and exhaust the nervous system. For what is borrowed in this way, we pay very heavy interest.

It is worthy to be remarked, that not only do excess in diet, and extreme abstinence, too much rest and excessive fatigue, extremes of heat and extremes of cold, disorder the body; but that they all seem when carried to the utmost to affect the body in the same, or nearly the same manner. All by eventually inducing those disturbed actions, which constitute impairment, or disease of the nervous or vascular systems. In fact, what is called *reaction*, under most circumstances, consists of febrile or inflammatory processes; and conversely, namely, that inflammations and fevers, are probably intended to rid the body of some inconvenience—some effete matter.

MENTAL CAUSES:—The great gift of the mind, which effects its operations on the body through the medium of the Brain and nervous system, by which man is so raised above the lower animals—by which he enquires, improves, records his improvements, and looks beyond this life—is a gift that his imperfect nature cannot bear without the tribute of occasional inconveniences, from which the less privileged animals are exempt. Its inordinant action, and its vehement impressions of which it is susceptible, exhaust the nervous energy, or impair the nervous actions, or alter the actual condition of the nerves; and thus deprive the physical part of the system of some of its power, increase its susceptibility, disturb the process which should be per-

formed in the different bodily organs, and bring on disease, or gradually enfeeble the whole system. From such causes, we perceive, in different cases, various irregular actions,—agitation, trembling, faltering voice, unsteady gait, spasm, indigestion, hysteria, epilepsy ; or exemplifications of diminished power, as in various forms of paralysis.

By sloth and negligence, or by irregularity and prodigality of application, the powers of the mind itself are equally impaired in some cases, and in others disturbed. Sudden and excessive joy exhausts the mental and nervous powers at once ; and sudden and overwhelming sorrow oppresses both, producing a state which is followed by that deep sleep which restores the capacity of endurance, and sometimes, by that sleep which ends all worldly suffering.

Herbert Spencer says, “ It is asserted by not a few, that among the educated classes the younger adults and those who are verging on maturity, are neither so well grown nor so strong as their seniors. On first hearing this assertion, we were inclined to class it as one of the many manifestations of the old tendency to exalt the past at the expense of the present. Calling to mind the facts that, as measured by ancient armour, modern men are proved to be larger than ancient men ; and that the tables of mortality show no diminution, but rather an increase in the duration of life ; we paid little attention to what seemed a groundless belief. Detailed observation, however, has shaken our opinion. Omitting from the comparison the labouring classes, we have noticed a majority of cases in which children do not reach the stature of their parents : and, in massiveness, making due allowance for difference of age, there seems a like inferiority. Medical men say that now-a-days people cannot bear nearly so much depletion as in times gone by. Premature baldness is far more common

than it used to be ; and an early decay of teeth occurs in the rising generation with startling frequency. In general vigour the contrast appears equally striking. Men of past generations, living riotously as they did, could bear more than the men of the present generation, who live soberly, could bear. Though they drank hard, kept irregular hours, were regardless of fresh air, and thought little of cleanliness, our recent ancestors were capable of prolonged application without injury, even to a ripe old age ; witness the annals of the bench and the bar. Yet we who think much about our bodily welfare ; who eat with moderation, and do not drink to excess ; who attend to ventilation and use frequent ablutions ; who make annual excursions, and have the benefit of greater medical knowledge ; we are continually breaking down under our work. Paying considerable attention to the laws of health, we seem to be weaker than our grandfathers, who in many respects defied the laws of health. And judging from the appearance and frequent ailments of the rising generations, they are likely to be even less robust than ourselves.

“What is the meaning of this ? Is it that past over-feeding, alike of adults and children, was less injurious than the under-feeding to which we have adverted as not so general ? Is it that the deficient clothing which this delusive hardening theory has encouraged is to blame ? Is it that the greater or less discouragement of juvenile sports, in deference to a false refinement, is the cause ? From our reasonings it may be inferred that each of these has probably had a share in producing the evil. But there has been yet another detrimental influence at work, perhaps more potent than any of the others—we mean excess of mental application.”—“*Causes of the degeneracy of mankind.*”

The influence of sudden mental impressions on the cir-

culatation, in whatever way this is exerted, is evident enough in numerous instances. Their power in the production of that unequal distribution of blood called *determination* is conspicuously seen in the simple act of blushing. Violent anger, or a sense of shame, causes the smaller vessels of the head and face to be instantaneously suffused with blood. By similar, but more violent effects, anger has led to apoplexy; and this passion is seen to render the face red in some individuals and white in others. Fear commonly produces paleness, and extreme fear may induce death. The functions of the lungs may be affected, or at least the respiratory exertions are quickened, by surprise or similar emotions; and simultaneous palpitations show that the heart responds to the same influences; or its sympathy may produce some suspension of its actions, and syncope or fainting ensue: the faltering speech and trembling limbs on some occasions, and the increased speed and strength exhibited on others, equally show how the muscular energy may be influenced by temporary states of the mind. The gushing of tears in states of sorrow, the diarrhoea and copious urinal secretion under the action of fear or vexation: the sudden appearance of gout and of cutaneous eruptions in circumstances productive of great mental disturbance; the profuse perspirations, and the altered colour of the hair sometimes induced, are all illustrations of the operations of the same class of causes.

Long continued depression of mind, long continued anxiety, or long continued discontent, produce effects which are deeper and less immediately visible. The nervous and vascular system seem equally to suffer; and habitual disorder of some of the functions, going on to the structural alteration of some organ, is the consequence. Chronic determination of blood to the vessels of the

stomach or lungs, or to the liver, or intestines; or to the heart, or to the brain itself, are common results. Obstinate dyspepsia, attacks of asthma, permanent mischief to the liver or intestinal functions, or some mental disorder, are among the modes in which such results are manifested: as is also a slow increase in the size or change in the structure of the heart itself; curiously according with that strong and melancholy expression, that the person thus destroyed has “died of a broken heart.”

On the other hand, need any one be informed of the happy effects of a tranquil state of mind, or of the improved health which is secured by complete relief from heavy anxiety, or the blessedness of real contentment? For

There is a jewel which no Indian mine can buy,
No chemic art can counterfeit;
It makes men rich in greatest poverty,
Makes water wine, turns wooden cups to gold,
The homely whistle to sweet music's strain;
Seldom it comes, to few from heaven sent,
That much in little—all in nought—Content.—*Wilbye.*

Diseases are sometimes produced by a disordered imagination. Some time ago, a patient in one of our hospitals, died from small-pox; another man, in a healthy condition was told that he would have to sleep in the bed in which the small-pox patient had died; he was put to bed, but not in the bed which the man had died, but in a perfectly clean bed in a good ventilated room, he not knowing the change; the effect produced was such that the man began to suffer from pains in the back, and all the other characteristic symptoms of small-pox, and of such a severe nature, that he speedily died. In this case it is clear that the man died by disease brought on by the imagination that he was put into a bed in which a small-pox patient had died, whereas he was put into a perfectly distinct room and bed.

It is recorded that in a Bristol infirmary, a number of servant girls, mostly well conducted and respectable, were in one of the wards, and whenever any one of these girls had an attack of hysteria, the other girls were sure to follow with similar fits. Hysteric fits are generally brought on by anything that affects the imagination or the feelings, women are more easily attacked than men, the latter have generally a less mobile nervous system, and are more influenced by the intellect, but they are, nevertheless, sometimes attacked. There is an instance that took place some years ago, which may be here mentioned. In this case a young girl was attacked with a very violent convulsive fit, brought on by alarm, consequent upon one of her companions putting a mouse down the inside of her dress. The girl had great antipathy to mice, and the sudden shock threw her into this fit ; other girls very soon passed off into similar fits ; and afterwards there got to be an imagination in the minds of the work people, that these fits were produced by some emanations from a bale of cotton ; and the consequence was that they spread, till scores of the young women were attacked day after day with these violent fits. The medical man who was called in saw at once the state of things ; he assured them in the first place that it was all imagination, that there was nothing in the cotton ; and in the second place he administered as a remedy a few violent shocks from an electrical machine, which he assured them would do no harm, but would cure them. And cure them it did. There was not another attack in the place afterwards. Dr. Darwin speaks of the inmates of a Nunnery who were all afflicted, one after the other, and at length altogether, with a desire to imitate the inharmonious nocturnal sounds of cats.

The education of young women is very defective ; a mother

would be in sad despair if her daughter did not give early indications of what is called *acute sensibility*, and nothing is neglected that may endow her with this gift ; there is inaction of the muscular system ; cultivation of music ; frequent parties, balls, and public entertainments ; the understanding unemployed ; or books read, which excite certain unhealthy feelings, and nourish illusions ;—such are the different influences to which girls are subjected at an age, when the mind should have quite a contrary direction, and its powers should be devoted to the obtaining of an accurate knowledge of the necessary duties of domestic life, the one order of faculties is alone exercised,—improper expectations, vain rivalries ; these will become predominant over the reasoning faculties, and produce a host of vapourous, hysterical, hypochondriacal, and maniacal disorders.

There is a principle in the human body which enables it, when not previously disordered, to support and resist the influences of all the agents of disease up to a certain point. By this principle, great, and even sudden changes of temperature, are able to be endured, and the body is secured for a time against the effects of the noxious atmosphere of our cities and towns ; but,

“Ye who amidst this feverish world would wear
A body free from pain, of care a mind,
Fly the rank city, shun its turbid air ;
Breathe not the chaos of eternal smoke,
And volatile corruption from the dead,
The dying, sickening, and the living world,
Exhaled to fully Heaven’s transparent dome
With dim mortality.”—*Dr. Armstrong.*

Great variety and likewise great quantity of food may be taken, when in health, without inconvenience or permanent uneasiness. So also exercise may be taken, even to the production of extreme fatigue, or we may devote our-

selves to long continued study, and yet remain well for a time, and it is familiarly seen that neglect of proper rest often passes unpunished. When we are in perfect health, the various trials met with in the world; the joys, the sorrows, the anxieties, which by turns affect us, are met with steadiness and fortitude, and pass away without disturbing, permanently, the equilibrium of that part of the system on which they make their transient impression.

But when, by the prolonged or inordinate impression of some of the causes of disease already enumerated, or by other causes of disease which remain to be mentioned, the vital power is impaired in any one organ; when, for instance, the digestive, respiratory, or cutaneous (skin) functions, or the faculties of the mind, begin to show a little interruption of vigour and regularity, even the ordinary objects with which the especial function is habitually concerned become exciting causes of disease. In short, all those things which have occasionally been defined as the sources of vital motion,—all external stimuli, all ideas of the mind, and volition,—then become causes of actual disease.

It is not to be forgotten, moreover, that the MEANS EMPLOYED FOR THE PREVENTION AND CURE OF DISEASES are not always guiltless of producing others. VACCINATION, which was put forth by Dr. Jenner as a preventative of small-pox, has not only failed to stamp out that disease, but it is found that by the operation, a number of the most loathsome diseases may be transmitted by the matter put into the child's arm. I have met with scores of cases, where the health of the child has been completely ruined by this operation.

Let us here pause for a few minutes to enquire "What is vaccination?" Well, in the year 1775, Dr. Edward

Jenner, a general practitioner of medicine, in Gloucestershire, whilst engaged in *inoculating* with small-pox, observed that the virus had no effect on a number of persons. On enquiry, he learned that they, in common with others in the same neighbourhood, considered themselves to be protected from small-pox, by virtue of having had an attack of cow-pox, contracted during the operation of milking the cows. Impressed with the circumstance, he most carefully made observations and enquiries, which confirmed in him the belief that in cow-pox he had a direct antidote to the small-pox poison. Twenty years afterwards, May 14th, 1796, he tested it by vaccinating one James Phipps, with matter taken from the hands of a female, who at this time was suffering from cow-pox. On the first day of the following July, Dr. Jenner inoculated Phipps with small-pox virus, which taking no effect, convinced the doctor that his belief had a foundation in fact. He collected more evidence in support of his views, and in the year 1798, published an essay, entitled "An Enquiry into the causes and effects of the *Varolæ Vaccinæ*: a disease discovered in some of the Western counties of England, particularly Gloucestershire, and known by the name of the cow-pox." In his essay Jenner states "that cow-pox is communicated to the cow from the horse, where it appears on the heels, and is known by the name of the *grease*; the hands of farm-servants and milkers being the medium of communication." In 1800, he expressed his conviction that "the cow-pox is capable of extirpating small-pox from the earth." In his fourth work, published in May, 1801, he concludes thus, "that it is now too manifest to admit of controversy, that the annihilation of small-pox, the most dreadful scourge of the human species, must be the final result of this practice."

The new antidote took amazingly, and thousands were vaccinated. In 1802, a committee of the House of Commons reported upon the practice; and upon Jenner's claims as the discoverer, whereupon Parliament voted him £10,000, which was afterwards (in 1807) increased to £30,000; and in 1808, the Government took vaccination under its care. Small-pox not being prevalent for some time, vaccination was considered to work marvellously; but after a few years, in spite of Jenner's new antidote, and in defiance of its protectors—the Government—small-pox again appeared, and in 1825, the slain numbered 1,300 persons, among whom, horrible to say, "were several who had been vaccinated." Further vaccinations and re-vaccinations were so powerless against the foe, that in 1838, Dr. Gregory stated, "That the admission into the Small-pox Hospital, *more than doubled the average number received annually, prior to the discovery of vaccination.*"

But no failures appear to have been sufficient to check the zeal of its advocates. Sir Gilbert Blaine wrote, "It is demonstrable that if at the first moment of this singular discovery, at any moment since, at the present or any future moment, mankind were so wise and decided to vaccinate, the whole human species who have not gone through the small-pox, from that moment would this most loathsome and afflicting of all the scourges of humanity be, *instantaneously and for ever banished from the earth.*" But, alas! the bombastic declaration of the baronet, received in a few years such a decisive contradiction, that the advocates of vaccination were compelled to examine into the causes of failure. The result was, that they broached the theory that the protective influence of vaccination was of limited duration only, and that to insure the complete annihilation of small-pox, it was necessary that the operation should be

repeated. Accordingly re-vaccination was recommended, and practiced to a considerable extent; but yet, case after case of small-pox supervened upon vaccination at so recent a period, that its power of protection could not have been impaired by age. This explanation being found unsatisfactory, it was discovered that to render the system proof against the small-pox poison, one vaccine vesicle, one prick with the lancet, was insufficient. *Two* vesicles were then recommended, then *three*, and now we have reached to *five*. Yet, despite all these precautions, the malady insisting upon making its appearance occasionally, the enthusiastic admirers of Jenner's antidote, lacking not in their zeal, applied to Parliament for, and actually obtained an Act, making it *compulsory*, under pain of fine or imprisonment, on *every* parent to procure the vaccination of his child within three months of its birth. That Act is in active operation to this day. In every district "vaccination stations" are established; and a no less sum than £350,000 is expended annually for performing parochial vaccination.

The Act is being rigidly enforced, vaccination is thoroughly carried out in almost every part of the kingdom, and were it only possessed of but a small amount of the efficacy ascribed to it by its advocates, small-pox would be almost unknown, except among the unvaccinated.

We have shown that, according to Jenner and his supporters, small-pox should, if vaccination possessed the power ascribed to it, be "for ever banished from the earth." Oh, indeed, Sir Baronet! But, what are the facts? After the above splendid (?) illustration of the prophylactic value of vaccination was the small-pox no more seen, or was its virulence any the less? Do not suppose it. The plague—small-pox, like a destroying angel, remained stationary for a time, and then descended in the very

midst of all this "stamping out" by horse-grease blood-poisoning—so called vaccination. It is a fact, that the vaccinated are more liable to the small-pox than their unvaccinated neighbours; of this I have had abundance of evidence. During a late epidemic of small-pox in the town of Leicester, and in one of the streets of this town every person in every family were vaccinated, and some of them re- and re-re-vaccinated, with one exception, the excepted family, consisting of the father and mother with six children, all of whom were unvaccinated; during this epidemic, every individual of the vaccinated families in the street, had the small-pox, some of them having it in its worst—confluent—form, a number of whom died during the attack; whereas, every individual of the one *un*-vaccinated family entirely escaped from the disease. Hundreds of similar instances might be quoted; but would occupy too much of our space. The following occurred in my own family: during the epidemic of small-pox of 1871, my children, three of whom (the eldest) are vaccinated, and the others were unvaccinated. The vaccinated ones took small-pox, and had it very severely, my two unvaccinated children likewise had it, but in a very mild form; they were all suffering at the same time; the vaccinated ones commenced the disease in the family, and were a much longer time in recovering from it than were the unvaccinated ones. Just one other example of its protective (?) power, and then we will pass on. One of my neighbour's, on the appearance of small-pox in the town, determined that he would have himself, wife, and son re-vaccinated; they were immediately operated upon by their own private practitioner, in order to ensure the use of what they called "*pure lymph*;" in the course of four or five days, the husband's arm began to swell, and at the end of the week,

erysipelas set in, very acutely; the doctor was called in, and he treated the case for some three months before the man was able to resume his ordinary duties. On the tenth day after vaccination, the son caught the small-pox; the case proved to be of such a virulent nature, that it was with great difficulty that any one could be found to attend to him during his illness; the surface of his body was one complete mass of malignant and putrescent eruption.

It was found during the last epidemic of small-pox, that 84 per Cent. of the patients admitted into the London Small-pox Hospitals had been duly "protected," while in Marylebone, no less than 92 per Cent. of the small-pox patients were vaccinated. The Registrar General has shown, that as age increases, liability to small-pox decreases. Of children under five years of age, he found that 10 per Cent. died of the disease; above five and under twenty, 3 per Cent.; above twenty and under forty, 2 per Cent.; and above forty and under sixty, less than 1 per Cent., at once showing, that the less they were under the influence of vaccination, the less liable were they to the attack of small-pox, or, that the greater mortality occurred under the age of seven, at which time vaccinators hold that the operation loses its effects. Dr. Keller (chief physician to a railway company in Germany) gives the following statistics. During 1872, there came under his notice five hundred and seventy-three cases of small-pox amongst the company's servants, or members of their families. Of these the number of eighty-four died, or 14.66 per Cent. Three hundred and twenty-two of the whole number had been vaccinated; one hundred and ninety-seven had not been vaccinated. The doctor found the mortality, at different periods of life, among the vaccinated and unvaccinated, to be respectively as follows, namely:—from two

to three years of age, 30 per Cent. of the vaccinated died ; of the unvaccinated only 19 per Cent. died ; from three to four, vaccinated died at the rate of 15 per Cent., unvaccinated 9 per Cent. only ; from four to five, 14 per Cent. of vaccinated, and but 10 per Cent. of the unvaccinated died ; from five to ten, 11 per Cent. vaccinated died, of unvaccinated 9 per Cent. ; from ten to fifteen, the vaccinated died at the rate of 8 per Cent., unvaccinated 7 per Cent. died from the disease—small-pox.

It was said, by some doctors, that persons who had been vaccinated and yet took the small-pox, that they did so either because the lymph was impure, or else that the operation had been improperly performed. What did they mean by pure lymph? Where did they get it? It was taken from the arm of one child and put into the arm of another. Well, and from what source did they obtain it? From the arm of another child. And so we might trace it, until we got to Jenner's cow and the grease of the diseased horse. But it is not possible to tell if the child, from which the lymph is taken, is a healthy child or not. There are many diseases which might not appear in the life time of the child, but would do so in the grand child. It is impossible to tell whether a child was properly healthy or not. How was it possible for them to tell what had been settling in the blood of progenitors for seventy years or more? What diseases had been picked up during that period? And seeing that the so-called "pure lymph" has its origin in the greasy heels of the horse, and as grease is an unmistakable evidence of lung disease, the matter in the heels and that in the lungs, corresponding in every respect, it cannot be doubted that a large amount of the increase in the number of deaths from consumption and other chest diseases, are to a great extent due to the so called protection

afforded by vaccination. It has been proved over and over again, that syphilis has been communicated by vaccination.

Dr. Hutchinson, a most eminent surgeon in London, in a communication which he made to the Royal Medico-Chirurgical Society, mentioned several cases where syphilis had been communicated by vaccination, and about which there could be no mistake. Thirteen adults were vaccinated from the arm of an infant, which was, as far as external appearances could lead, apparently healthy. Five weeks after the operation eleven of these individuals were affected with well-marked syphilitic sores. I am personally acquainted with a case of which the following are the particulars:—The father at first refused to allow the child to be vaccinated, but afterwards consented, having been once fined for his previous refusal, after a week or two, the following symptoms appeared: languor, debility, and then little black spots appeared on his thighs and back, which presented a most shocking appearance. The surgeon who had vaccinated the case, gave it as his opinion that the syphilis had been communicated to the child through vaccination.

Dr. Hitchman says, “As a public vaccinator, I repeat that hundreds of men, women, and children *have* been poisoned by means of four or five punctures, yet none of them *took*, as the phrase is, in form of a distinct vesicle, having an elevated edge and depressed centre—significant of small-pox, and distended with a clear lymph or ‘pure matter.’ What is the issue of life long experience? On either arm of the child were not visible, as an invariable rule, four or five ugly scabbed ulcers, larger than shillings, with dusky red indurated margins; but, as damming substitutes for their conspicuous absence, came an intractable bubo in the corresponding axilla, a hideously

sunken bridge to each syphilitic nose, sores about the arms, inflamed eyes scaly diseases of the skin of a copper colour, with a tendency to everlasting ulceration, or recurrent excoriations, specially *baldness*, groups of tubercles, ay, dirty yellow, or nasty brown stains, ulcers on the tonsils, morbid action in the bones, with an irresistible tendency to scrofula, consumption, or 'water in the head,' &c. Such is the propagation of syphilis by vaccination !”

Mr. Shaw says, “I have known most fearful convulsions brought on by it, and that in children apparently in the firmest health.”

The attempts to prove the value of vaccination as a preventative, or mitigator of small-pox, having one and all signally failed, and seeing that many most loathsome and dangerous diseases may be communicated by the process, we contend that the compulsory clauses of the Vaccination Act should be forthwith repealed. Those who wish to be vaccinated, by all means let them have all the protection the process is capable of conferring upon them. If they are proof against contagion as they suppose themselves to be, they can have nothing to fear from their unvaccinated neighbours. We believe that in a careful observance of the laws of hygiene *alone*, can we find safety from the incursions of this loathsome disease. Small-pox, as all other zymotic diseases, may be stamped out by the use of pure oxygenated air, pure water, wholesome food, unadulterated drink, proper clothing, sufficient exercise, frequent bathing, better drainage, no alcohol, no tobacco, in a word, CLEANLINESS, and regular moral and mental culture.

The excessive employment of strong medicines has a tendency to produce disease ; thus, *drastic purgatives* will bring on hæmorrhoids or piles ; *mercury* will hasten the process of consumption, produce disease of the bones ;

excessive use of the *alkalies* will irritate the digestive mucous membrane, so with *acids*; and all *narcotics* will obtund the sensations and cloud the intellect. There is the strongest reason to believe, that many nervous affections are exasperated by the habitual use of mercurial purgatives, as blue pill; *iodine* has sometimes caused more obvious nervous irritations; the *nitrate of silver* produces a permanent disease of the skin, limited, however, to an affection of its colour.

SMOKING, ETC., OF TOBACCO.—The use of tobacco which has become so generally prevalent in this country, where we see boys, ranging in age from fourteen years, with either a short pipe or a cigar. They either snuff, or else they chew the weed. The same habits prevail to a great extent over the whole surface of the globe.

When we take into account the disagreeable and repulsive character of this article to the palate in its natural state, it is truly surprising that it should ever have been thought of as an article to be used in the manner that it now is; and when to this is added the exceedingly important consideration that it is very injurious to health and cleanliness, it is the more astonishing.

✂It should be clearly understood that tobacco is an actual and virulent poison. †Four drops of the essential oil of tobacco is a sufficient quantity to produce violent convulsions and death in a very few minutes. Two drops are sufficient to destroy a dog. The essential oil—the principle of which is nicotine, is contained in the smoke, the amount varies according to the quality of the tobacco, and during the process of smoking it is by no means dissipated into the atmosphere, but is carried by the smoke into the mouth of the smoker; it is found that 4,500 grains of tobacco smoke yields no less than thirty grains of this

nicotine. Tobacco is of so uncongenial a nature, and has such a baneful influence, that it is seldom used medicinally, even in the most desperate cases. In many instances where it has been administered internally, or even externally, it has produced the most terrible symptoms. I once knew a reverend gentleman who suffered from tooth-ache, which was of such an intractable nature, that it would not yield to any remedy that had been used. It was decided that the essential oil of tobacco should be tried; accordingly the point of a fine needle was dipped into some of that substance and applied to the tooth; the nerve being bare its action was immediate; the effects produced were sickness, diminished action of the heart, trembling of the limbs, afterwards insensibility, and, in fact, he presented all the appearance of a man who had been drinking until he was dead drunk. A tobacco poultice applied over the region of the stomach produces the most terrible vomitings. Its application to the head produces similar effects.

An individual by smoking, draws off nature's first and greatest agent which is employed in digesting the food necessary for the nourishment of the body. This is likewise effected by the process of chewing. Darwin (*Zoonomia*) says:—"The unwise custom of chewing and smoking tobacco for many hours in the day not only injures the salivary glands, producing dryness in the mouth when this drug is not used, but I suspect that it also produces scirrhus of the pancreas. The use of tobacco in this immoderate degree injures the power of digestion, by occasioning the patient to spit out that saliva which he ought to swallow; and hence produces that flatulency which the vulgar unfortunately take it to prevent I saw, what I conjectured to be a tumour of the pancreas and indigestion, which terminated in the death of the

patient. He had been for many years a great consumer of tobacco . . .”

✧ Smoking and chewing not only carry off saliva from its proper place, but they likewise saturate the tongue and mouth, so that what saliva is secreted after the operation of either process, is contaminated with the juice of the drug, which saliva in this pernicious and poisonous condition finds its way into the stomach; and who can wonder, in view of these considerations, that tobacco fixes its deadly grasp upon the various vital organs of the body, gradually undermining the health, and disseminating the seeds of disease, which only awaits a suitable opportunity to make itself manifest.

The action of tobacco is directly upon the nervous system, enfeebling, exhausting, or destroying the powers of life. No fact is better known to medical practitioners, than that tobacco has great influence in producing impotence. This is owing to its depressing action on the nerves. It acts first on the brain and nerves, and then on the various muscles. When the nerves of the heart and stomach have been, by the long depressing influence, lowered in their power, in consequence of the diminished power of the heart, digestion which produces the blood is impaired, and consequently the various muscles of the sexual organs are impaired. It is especially liable to diminish the sensibility of the lining membrane of the mouth, nose, and stomach, and by enfeebling the nervous power of the latter organ, instead of promoting digestion, as its supporters urge, it has a direct tendency to produce *indigestion*, with all its subsequent symptoms. The dryness of the mouth produced, thus creating a thirst, which in many cases is not satisfied with anything short of alco-

holic drinks. In this way the use of tobacco is a frequent fore-runner or associate of drunkenness.

The use of tobacco by *boys* produces a state of nervous excitability, which renders them peculiarly susceptible of lustful dreams and amorous fancies which seek their gratification in secret bad habits, now so prevalent among the youth of this country.

All consumers of tobacco, at once and for *ever* DESIST! For the sake of your *health, property, time, friends, voice, and memory.*

I have known several who by their great attachment to the pipe have been led into drunkenness, poverty, and crime.

But some may say, "I only take a little pipe or a cigar now and then, to please others," then you may soon be as great a slave to it as others are. When it is offered to you, refuse it. Touch not one particle of the horrid drug, and you will never regret the position you take. I consider the use of tobacco at once excessively injurious to the organs of the **body** and **mind**.

CHAPTER III.

DIETETICS.

From the peculiar and extraordinary powers of the digestive apparatus to convert and assimilate food into the blood, by which the animal structures are supported, repaired, or injured, as well as from the nervous sympathy that subsists between the stomach and every organ of the body, it is very evident that any vicious disturbance of its office must necessarily act as a powerful exciting cause to local or general disease, and most especially so, when a predisposition thereto exists. The various effects of food and drink upon the human frame, both as regards quantity and quality, are daily and hourly manifested among us by the constantly occurring petty derangements of health which range under the name—Indigestion. Whether we excite the stomach by too much, too various, or too stimulating food—or whether we depress or debilitate its powers by insufficiency of supply,—the general health of the body must needs become deranged; and those in whom lurks a predisposition to some local disease, rarely continue long as simple dyspeptics—Dyspepsia, indeed, may be present in combination with the ailment it originally induced, but where the predisposition existed, it soon ceases to be the primary disorder.

Unless illness is positively established, it is seldom that we pay much regard to the stomach or to the effects upon it of our ordinary food. Very few persons of even mature age bestow common pains to ascertain those effects by reflection; whereas, if we more commonly watched our sensations after meals, and by noting the consequences of various kinds of food, regulated our diet accordingly, we should save ourselves a great amount of uneasiness at a very small expenditure of trouble, yet how rarely is this little act of prudence done!

The stomach not only varies under different constitutions, instanced by the varieties of appetite, but it is occasionally subject to morbid changes of action, owing to the exhausted powers of the brain and nervous system, so that the diet which usually "agrees with it" may become irksome and offensive. It is these peculiarities which render any general dietetic laws of such variable value; and, unless we prepare a code founded upon experience, personally obtained, and abiding by the regulations of others may prove of little service; yet, we shall in after pages, give a few plain directions as to the properties and uses of diet as founded upon practical, experimental knowledge. We know, indeed, that certain foods and drinks exercise (generally) specific influences; 'salted provisions, for instance, give rise to scurvy and chronic diarrhœa; but experience shows us, moreover, that the food which to one individual affords the best nutriment, and is least difficult of digestion, operates adversely to another. These general influences are, however, well understood, and form the basis of all dietary tables extant. It is well to know them, but it is better, knowing them, to inquire by personal examination, whether the effects of divers kinds of food upon our own stomachs

correspond with those which they have upon the general stomach, and to chart our tables accordingly.

Though by mental attributes and mental culture man is placed in a state immeasurably superior to the lower animals, it is remarkable in how few instances he cultivates a superiority of bodily health. It is rare that the brute species suffer from dietary excesses; an instinctive perception (would that man possessed the blessing!) seems to guide them in the exercise of their feeding powers, by which the "what" and the "enough" are clearly prescribed and never exceeded: so that throughout all the tribes of beasts, birds, fishes, insects, and animalculæ, it is very questionable, whether one solitary dyspeptic patient could be found. They almost all (unless destroyed) attain to the utmost limit of life; and, while it endures, they generally enjoy a state of sound health by the use of those powers which man delights to abuse.

It is by excess and by variety in feeding, that we lords of the creation are so miserably inferior to our despised vassals in point of animal condition; and, although the thought is not a little humiliating, we shall ever continue in that inferior position so long as we voluntarily sacrifice health to appetite. Civilized life has reached with us a pitch of refinement, that, in the eye of *mind*, the body is too worthless and contemptible to be concerned about; and accordingly the open declaration of a fit of drunkenness or epicurean repletion, is a thing to laud over, to smile and joke, but not to blush at!

As in pleasures of all kinds, it seems to be their very property to lead to excess, so it is with the pleasures of the table. How rarely in present health are they resisted! Yet in these, as well as in every other, the greatest amount of enjoyment will be found in moderation. Were our

daily diet to consist of simple articles and smaller quantities, we should prolong life, and certainly secure one of its chief gifts—health.

Repletion of any kind is injurious, whether in eating or drinking. If the food be innutritious, it needs no very refined philosophy to prove the evil; but if it be even highly nutritious, it is not to be supposed that the more we take of it the more health we shall secure, the better we shall be. Food is to be employed, sufficient, simply to supply the continual metamorphosis or waste of the animal substance, to form such new blood as will be sufficient to replace the quantity lost, and to repair what has been rendered unfit for the purpose of life. The ultimate effects of a super abundance of food forced into the stomach, or repletion, as it is called, is actually anticipated or foretasted by present *sensation*, the oppression and discomfort felt after a “too hearty” meal; and, in direct proportion as the excess is repeated, by so much the more speedily and effectively, does the general disturbance of the health become durably established. Intoxication is not less pardonable in a moral point of view than dietary indulgence. Though the result of intemperance is perhaps more immediately visible in the former than in the latter. Whilst the one is more rapid in its effects—the diseased liver, nervous prostration, mental imbecility—the other is slower in its action but not less certain. Slight fits of indigestion are at first felt, with head-ache, heart-burn, pain, low spirits, oppression, uneasiness, distress; which attacks afterwards increase in severity and are more prolonged, with shortness of breath, fulness, corpulency, wretched days, and nights; the appetite becoming more and more depraved, continually yearning for what has depraved it, and what, if granted, must increase the injury. The

system begins to sink, and if there be predisposition to some general or local disturbance, some resisting power gives way, and the rudiments of disease begin to exhibit themselves—when to be eradicated, who can tell?

Whilst alluding to intemperance in the use of food, the abuse of drink, too frequently its accompaniment, may, perhaps, be again adverted to without impropriety. That water was originally designed by nature to supply the waste of animal fluid secretions, is abundantly evidenced by the singular disrelish which every creature, below humanity, exhibits towards other liquids, no other fluid so effectively allays thirst as water, whatever drink we take, nature extracts the water for her purposes, leaving behind the substances held in combination, to act according to their specific influence upon the alimentary canal. But, when once we appreciate the effects of dietary stimulants, it is rare that unadulterated water continues to be palatable; and the impetus of social artificial habits become of such a force as to render within us a total dislike and disregard for pure water, and a craving for drinks which excite and stimulate. If this craving become established to any great extent, the strongest constitution will fail; and where there exists a predisposition to disease, especially of the chest, the most rapidly fatal consequences may be apprehended.

So far as appetite is concerned, intemperance, either in drinking or eating, is an act of egregious folly, because it is known that the gratification resulting from it is counterbalanced by the amount of suffering which is sure to follow. But folly is too mild a term for intemperance; it is certainly an act of deep criminality. Premature decay is the result, and the guilty creature who, by his own suicidal hand, suddenly arrests the life

which he has made insupportable by his own misconduct, is not many degrees more criminal morally, than he who by long-continued intemperance perishes beneath the slow but certain poison of dietary excesses.

These observations may be characterised by severity, yet, I am perfectly satisfied of their justice, and let it be understood that in making them, I do not so much allude to the professed sot and glutton as to him who is "only" casually freshened and excited by such indulgences.

The truth of these views may be questioned by those who are disposed to instance the cases of those "Old drinkers and hard livers" of advanced age, which may occasionally be met with in the world; but I am quite persuaded that scarcely a single individual will be found of this kind, who has not been engaged in some of those employments of life which at once fortify and invigorate the body, and thus his powers of vital resistance are so great that these abuses apparently make no injurious impressions. It is to the persons of sedentary habits, the resident in encraving cities and manufacturing towns, where the body may be said to merely vegetate, that these impressions have such a fatal tendency; to such persons, and to all, and most especially to those of delicate health, I would denounce the use of spirituous liquors as the most ruinous *gratification* that can be experienced, if they could see what is daily witnessed in the towns of England during post-mortem examinations, of the appearances presented by the livers of persons who have been addicted to ardent spirits, varying from that of the professed dram-drinker to the one or two glass grog-man, in all their shades of intermediate distinction, they would label every brandy, rum, or gin bottle with the word—"POISON."

Great attention should at all times be paid to regularity of habit in the several meals, especially the dinner.

It is not well to subject ourselves to violent changes in our modes of living, proceeding suddenly from a simple to a compound diet, or conversely; particularly if our employment has turned from active to sedentary, or from regular and quiet habits to a life of bustle and comparative hurry and confusion.

Let moderation, simplicity, and regularity in all matters relating to diet, be the three great laws to be implicitly obeyed, and they will most assuredly help you to maintain perfect present health.

I believe that fashion and authority will be compelled to descend to the steps of plain common sense, and submit to a radical reform in this subject of diet; I believe and anticipate, that there will be a period of time in the future, when life and health will be counted at a higher value than it is now, when every organ of the senses shall be perfected by a sane and graceful temperance—when all those hinderances to domestic happiness and social good which now exist under the guise of bad temper, clouded intellect, imbecile stillness, or mischievous activity, or even disease itself, which may be traced to deranged brain power, caused through stomach obstructions, shall be scouted into oblivion. May that time speedily come!!!

Dr. Beaumont ascertained by experiments made upon a Canadian, named Alexis St. Martin, who received a gun-shot wound which made a direct opening into his stomach, and which, when the wound healed became a passage, through which food might be taken out of the stomach at any time, the length of time required for the digestion of many of our common articles of

diet. The following gives the results obtained by Dr. Beaumont:—

ARTICLES OF DIET.	Mean time of Digestion in the Stomach.	
	How prepared.	Time in hours.
Milk	boiled	2
Milk	raw	2½
Turkey, domestic	roasted	2½
Lamb, fresh	broiled	2½
Potatoes	baked or roasted ...	2½
Beef, with salt only	boiled	2¾
Oysters, fresh	raw	3
Beef-steak... ..	broiled	3
Eggs, fresh	soft boiled	3
Mutton, fresh	broiled or boiled	3
Chicken Soup	boiled	3
Oysters, fresh	roasted	3¼
Bread, corn	baked	3¼
Oysters, fresh	stewed	3½
Beef, fresh, lean, dry	roasted	3½
Beef, with mustard, &c.... ..	boiled	3½
Butter	melted	3½
Cheese, old strong	raw	3½
Soup, mutton	boiled	3½
Bread, wheat, fresh	baked	3½
Potatoes	boiled	3½
Eggs, fresh	hard boiled or fried	3½
Salmon, salted	boiled	4
Veal, fresh	broiled	4
Fowls, domestic	roasted or boiled ...	4
Soup, beef, vegetables, and bread	boiled	4
Soup, marrow-bone	boiled	4¼
Cabbage	boiled	4½
Suet, mutton	boiled	4½
Pork, fat and lean... ..	roasted	5¼
Suet, beef, fresh... ..	boiled	5½

The subjoined remarks upon articles of diet suitable for invalids, it is hoped will be found to render this volume domestically acceptable and useful.

MILK. This is the only nutritive fluid with which nature has presented us; in fact it must be regarded as a

mixture of solid and liquid food ; the latter, however, considerably exceeding the former in quantity, and thereby demonstrating the necessity of a greater portion of fluid than of solid matter, for the reparation of that habitual waste upon which the necessity of alimentary supplies is founded. Milk is easily assimilated into the system, and therefore affords a quick supply of nourishment. Its nutritive properties may be increased by additions of various kinds, such as brown bread, oatmeal gruel, which also have the effect of obviating any costiveness which it is likely to produce ; the addition of a little lime water, will correct its natural tendency to acidity, and will also make it "sit" easy on the stomach. Many invalids can take boiled milk, but are unable to take that fluid in its natural state ; thus boiling renders milk easier to digest, but, it diminishes the nutritive quality, by coagulating the albumen, which as it rises to the top is skimmed off and thrown away. The addition of a little of the compound Essence of Cocaine, renders it easier of digestion to those whose stomachs ordinarily cannot stand milk.

EGGS, in point of nutriment and digestibility, may be classed next to milk ; but their qualities will greatly depend upon the manner in which they are cooked. When raw, they are certainly not so easily digested, as when lightly boiled : so as to slightly coagulate their albuminous principle : but if this process be carried too far, they are converted into a hard mass, which requires a long period for digestion.

FISH has been generally considered as holding a middle rank between the flesh of warm blooded animals and vegetable food. It is certainly less nutritious than mutton or beef ; but the health and vigour of the inhabitants of fishing towns evidently prove that it is sufficiently nourish-

ing for all the purposes of active life. Fish affords a valuable diet for invalids labouring under certain disorders; it is moderately nutritive, but, at the same time, not highly stimulative, and from the nature of its texture, it does not require a laborious operation of the stomach.

The mode of cooking fish is a circumstance of some importance. Frying them in lard or oil is an objectionable process: in general, boiling is best adapted for rendering them wholesome. Stewed fish, with the usual additions of glutinous and stimulant materials, is extremely injurious to dyspeptics. The only stimulant necessary is a little salt.

BIRDS AND THE FLESH OF QUADRUPEDS.—There exists a great variety in the qualities of the food furnished by birds and quadrupeds, with regard to nourishment, stimulus, and digestibility: the whiter meat of domesticated birds, as the wings and breasts of chickens, contains less nutriment than that which is furnished by wild birds, as the partridge, &c.; but the former is at the same time less stimulating and heating than the latter. The same observation will apply to the flesh of warm blooded animals, as the ox, &c.; that which is dark coloured and contains (as does venison, &c.) a large quantity of albuminous matter, and also a proportionate amount of creatine, is easily disposed of by the stomach, and a large quantity of highly stimulating chyle is produced from it. The whiter meats are, on the contrary, detained longer in the stomach, and furnish a less stimulating chyle. The former will, therefore, be more easily digested by weak persons than the latter; but the latter may, nevertheless, be preferable on many occasions, inasmuch as they impart less stimulus to the general system.

FARINACEOUS ALIMENTS.—The best, sweetest, and most nutritious article of diet, is that made from *unbolted* wheat-

flour—viz., brown bread; by brown bread I do not mean the dry stuff sometimes made by mixing a little bran with ordinary dough, but bread made from the *whole meal* of sound wheat, and having its full nutritive qualities. The white bread, made of flour deprived of the outer portion of the wheat, by the operation of sifting or *bolting*, is a frequent cause of disease, the tendency of starch upon the bowels is astringent, therefore, it is very apt to produce habitual costiveness. It is found by chemical analysis that the nitrogenous or flesh-forming portion of wheat resides in the outer layer, the very portion which is removed by the bolting process, and it is a physiological fact that this portion keeps up a healthy action in the bowels.

On looking over the subjoined table,* it will there be seen that £3 worth of wheat would restore as much waste of body as £12 worth of English beef.

* TABLE OF THE COMPOSITION OF FOOD.

100lbs. each of these Articles of Diet.	Solid Matter.	Water.	Heat forming principles.	Flesh forming principles.	Ashes.	Starch, Wax, Fat, &c.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Turnips	11.0	89.0	9.0	1.0	1.0	—
Red Beet Root	11.0	89.0	8.5	1.5	1.0	—
Potatoes ..	27.5	72.5	25.0	2.0	1.0	—
Carrots	13.0	87.0	10.0	2.0	1.0	—
Butchers' Meat.....	36.4	63.6	14.3	21.5	0.8	—
Bread (stale)	75.5	24.5	64.3	10.7	1.0	—
Peas	83.0	17.0	51.0	29.0	3.5	38.5
Barley.....	84.5	15.5	68.5	14.4	2.0	64.0
Wheat... ..	85.5	14.5	62.0	21.0	2.5	66.0
Beans	86.0	14.0	51.0	31.5	3.5	37.3
Sago	88.0	12.0	84.0	3.5	0.6	—
Maize	90.0	10.0	77.0	11.0	2.0	66.8
Oat-meal,.....	91.0	9.0	77.0	12.0	2.0	37.0
Rice.....	92.4	7.6	82.0	8.4	2.0	86.0
Onions.....	—	93.0	—	7.0	6.5	—

BREAD, in addition to its nutritive properties, performs a mechanical duty of some importance; it serves to divide the food, and to impart a suitable bulk and consistence to it; it is, therefore, more necessary to conjoin it with articles containing much aliment in little space, than where the food is both bulky and nutritive.

RICE is the general nutriment or food of the people of the East, with whom it answers the same purposes—as bread with us. As it is not much disposed to turn sour or ferment in the stomach, it is a wholesome food, when mixed with other things; if taken in large quantities by itself, from its low degree of stimulating properties, it is apt to remain for a length of time in the stomach. Prepared in the following manner it forms a nice bland mucilagenous aliment in cases of diarrhœa, and for shielding the stomach and intestines from acrimonious humours:—Wash and pick two or three ounces of the best rice, boil in sweet milk until quite soft, sweeten and season it well with cinnamon or nutmeg.

There are various other articles in domestic use which owe their qualities to starch, such as *sago*, *tapioca*, *arrow-root*, &c., and may be used for invalids in the following forms:—

Tapioca Jelly.

Soak tapioca in water for a night; then boil it gently until quite clear, and add lemon-juice, lemon-peel, sugar, and cinnamon or nutmeg at pleasure.

Arrow-root Jelly.

One dessert spoonful of arrow-root to two or three of cold water in a basin; mix; then add, slowly, boiling water, stirring until it thickens; add nutmeg, cinnamon, and sugar to taste. Milk, if preferred, may be used instead of water. -

Peas, Beans, &c., are scarcely suitable for an invalid's stomach. Peas form a wholesome food when green and young; but when full grown and dry they are indigestible, and contribute in a remarkable degree to the generation of gas in the intestines. Beans, like peas, are comparatively wholesome in their immature state. Kidney-bean, being eaten with its pod, is not so flatulent as other pulse; when well boiled it is easy of digestion, but not very nutritive.

Roots used for food are of two kinds: those which supply nourishment, and those which answer the purposes of a condiment or seasoning. Of the first class may be mentioned carrots, turnips, parsnips, beet, &c. Under the second class may be arranged onions, garlic, horse-radish, etc.

The *Carrot*, from the quantity of saccharine matter which it contains, ten per Cent., is very nutritive and slightly laxative; it also possesses a large amount of fibrous matter, which in some stomachs prevent the digestion of the root. It should be eaten when young, after thorough boiling. The *Turnip* does not contain so much nutriment as the carrot, it only containing six per Cent., it possesses the character of being flatulent, but, when well boiled and the watery part separated by pressure, it is easier of digestion than the carrot. The *Parsnip* contains about eight and one-half per Cent. of nutritious matter, and is easily digested. *Beet-root* contains much more nutritive matter than any other root, the potatoe excepted, it containing fifteen per Cent. Eleven per Cent. of the whole weight of the beet is saccharine or sugar matter, which is a greater proportion than exists in any other European esculent. The potato, properly belonging to the farinaceous class of articles of diet, holds a distinguished place as an article of diet. It contains from sixteen to eighteen

per Cent. of available nutritious matter. Its digestibility depends upon its kind, and the nature of the cooking operation to which it is subjected. The *waxy* potato should be shunned by the dyspeptic, it is so indigestible as to pass through the stomach and bowels in an unaltered state. The mealy potato more readily yields to the powers of the stomach, and affords a healthy nutriment. Roasting is preferable to any other form of cookery. *Mashing* potatoes renders them more indigestible. If boiled, do not let them be overdone; long boiling deprives them of a quantity of nutritious matter.

The *Onion*, although classed as a condiment, must, however, be considered as nutritive as well as stimulating; this is evident in its boiled state, by which process its acrimony is exhaled, and a sweet mucilage separated. The leek, garlic, and shallot are of the same species, and have qualities of the same nature. *Horse-radish* is warm and pungent, it is perhaps the best of all condiments for the prevention of flatulence.

Esulent herbs.—The leaves and stalks of such vegetables as are eaten at table in form of greens and salads, are arranged under this class. Herbs eaten in a raw state are far less digestible than when cooked in some form. During the heat of summer they are refreshing, and are calculated to allay that febrile state which full meals of animal food occasion. Of this class the *Water-cress* is the most beneficial; it promotes digestion, and corrects that tendency to flatulency which other raw vegetables are apt to produce. The *Lettuce* is generally eaten with other herbs in the form of a salad. Lettuce contains a narcotic principle, the effect of this is in a great measure obviated by using with it a vegetable acid, *e.g.* dilute acetic acid or vinegar; those persons who eat lettuce for the sake of its soothing effects,

ought to eat it without vinegar. *Celery* is a wholesome vegetable. *Cucumbers* are the most unwholesome of all uncooked vegetables, and should be avoided as poison by all invalids.

The vegetables which require to be boiled are the different species and varieties of the *cabbage*; their value does not depend so much upon their nutritive quality as the tenderness of their texture. On this account, the *cauliflower* and *brocoli* are the species to be preferred. Of the kind where the leaves only are employed, the *savoy* is of a sweeter and more tender texture than the others, particularly its central and upper leaves. *Brussels sprouts*, and some of the varieties of *kale* are also very tender. The cabbage tribe contains an essential oil, whence the unpleasant odour of cabbage water. This matter is liable to produce offensive effects in the stomach: vegetables of this class should therefore be boiled in two successive waters, in order to remove as much of this obnoxious oil as possible. *Asparagus* is quickly dissolved in the stomach, and, when young and sufficiently boiled, does not create flatulence or acidity, along with its mucilage it frequently contains some sweetness, which is a proof of its nutritive quality.

FRUITS.—These contain alimentary substances possessed of very nutritious qualities, and, when taken under proper circumstances, they contribute to health, and appear providentially sent at a season when the body requires that cooling and antiseptic aliment which they are so well calculated to afford. But to the invalid, nothing can be more injurious than large quantities of apples, pears, and plums, in the form of dessert, after the stomach has been already loaded.

Fruit may be arranged under the following heads:—Apple

species, stone fruits, small seeded fruits, small berries, and farinaceous fruits.

The *apple* species.—The apple is rather firm in texture, and on this account is often retained in the stomach for a long time. The apple when nicely roasted is very wholesome and is easily digested by weak stomachs. *Pears* are less firm in texture, and are therefore less objectionable than raw apples. The *orange* when perfectly ripe, may be allowed to the most fastidious dyspeptic, but the white, or inner skin should be carefully rejected, for it is very indigestible. The small seeded fruits are very wholesome. Of these the ripe *strawberry* and *raspberry* deserve the preference. The *grape* is also cooling and has a tendency to counteract putrescence in the system; but the husks and seeds should always be rejected. The *gooseberry* is not quite so wholesome as the fore mentioned berries, on account of the indigestibility of the skin, which is too frequently swallowed. The small berries, such as the *cranberry* and *bilberry* are rarely eaten, except when baked, and in that state their great acidity seldom proves injurious.

The farinaceous fruits, such as the melon, disagree with weak stomachs, and are unwholesome.

By cookery, fruit, otherwise unwholesome, may be converted into a safe and useful aliment. Dried fruits, from the large quantity of sugar they contain, are very much disposed to fermentation and to produce heartburn.

OF DRINKS OR LIQUID FOODS:—As the introduction of solid food into the stomach is for the purpose of furnishing material to repair the waste of the various tissues of the body, so is a supply of liquid material essentially necessary to supply the deficiency of the fluids, which are constantly exhaling from the body, during the performance of its numerous functions. The chyme and chyle may also require

the assistance of some liquid medium to increase the fluidity of the mass, or to favour the absorption of its finer and more nutritive parts.

If a liquid, holding nutritive matter in solution, be introduced into the stomach, it is either coagulated by the gastric juice, or its watery part is absorbed, and the solid matter deposited in the stomach; in either case the solid product is converted into chyme.

WATER:—As water is of such great importance in the various functional processes of the animal economy, it is necessary that it should be of the purest and best kind. Hard water—that which holds minerals in solution—is not so good to drink as that which is soft and pure. It will not so easily dissolve substances, and is therefore less fitted to aid circulation, and purification. For the purification and preservation of water, numerous ingenious methods have been adopted. The mechanical impurities, such as animal and vegetable matter, may be removed by filtration through sand—as is done in the reservoirs of our towns, but this is insufficient to remove *all* impurities. Rain water when collected in the open fields is certainly the purest natural water, and should be preferred; but when collected in large towns it is impregnated by the smoky and contaminated atmosphere through which it falls, and, when directed from the tops of houses into the water-butt below, contains calcareous matter, in which case it should always be boiled and strained or filtered previous to using it, as should in fact, river, spring, or well water,

TOAST WATER:—May be made by impregnating water with the soluble parts of toasted bread. This liquid will be very beneficial as a drink. It is thus rendered slightly nutritive, holding a certain portion of gum and starch in solution. A preferable mode is that of using biscuit,

reduced by fire to a coffee colour, instead of bread, the former is free from yeast. Boiling water should be used in its preparation, and it ought to be drunk as soon as it has sufficiently cooled; for, by being kept, it acquires a mawkish and unpleasant flavour.

Barley water.—The decoction of barley is a very ancient beverage; it is recommended by Hippocrates, and preferred by him to every other drink in acute diseases. It may be prepared in the following manner:—Pearl barley, 2 ounces; water, $4\frac{1}{2}$ pints. Boil down to three pints and strain. The addition of lemon-juice and sugar candy greatly improves the flavour of this drink.

Gruel.—Oats when freed from their skin, are called *groats*; in which state, as well as when ground into meal, they yield to water, by boiling, the fecula they contain, and form a nutritious gruel, which has also the good property of being slightly aperient. Gruel should never be kept longer than forty-eight hours, as it becomes ascescent after that period. One tablespoonful of oatmeal mixed by degrees with three tablespoonfuls of cold water, then add one pint of boiling water, boil for five minutes, constantly stirring; then strain through a hair sieve, to separate the undissolved parts of the meal from the gruel. This forms a nice thin demulcent drink. If a more substantial repast be required, double the above quantity of oatmeal may be used. To increase the nutritive quality of this aliment, milk may be added instead of water.

Balm Tea.—This is made by infusing a handful of the leaves in boiling water for ten or fifteen minutes. The liquor should be strained off, slightly sweetened, and then add a little compound Essence of Cocaine. Drink freely. This tea possesses the power of allaying irritability of the

stomach, and forms a good drink in all forms of fever. The same observations will apply to infusions of sage and sweet marjoram.

Tea.—There are two kinds of tea, imported into this country, black and green, both contain tannin and an alkaloid called *theine*, which has a powerful action on the nervous system; the proportions of these ingredients vary in different samples of tea. Green tea, possesses the greater amount of theine; a strong infusion of green tea has a tendency to enfeeble the sensibility of the nerves, and the irritability of the muscles; hence some invalids, after drinking a cup of strong tea, have feelings of depression, accompanied with various abnormal nervous sensations; others experience feelings indicative of derangement of the digestive organs; but these are rather exceptions from which no general rule can be deduced. The healthfulness of the infusion, when used with moderation, to the general mass of the community is established by evidence sufficient to outweigh any argument founded on individual cases. It must, however, be admitted that the digestive process is often retarded by the distension it will occasion after a hearty meal, the astringent principle (*tannin*) may also operate in arresting for a time, chymification. The addition of cream or good milk, certainly diminishes the astringency of the tea, by chemically uniting with its tannin.

Coffee.—This is more stimulating than tea, otherwise its effects are, generally, the same as those of the latter article; but some persons can never take Coffee without suffering from acidity of the stomach: where this takes place, its use must be abandoned. It is largely used by the Turks, and possesses the power of counteracting or abating the influence of the inordinate quantities of opium they are accustomed to swallow. Sugar and cream, increase its nutritive qualities.

Chocolate—is prepared by reducing the cocoa seeds, after roasting, into paste, to which some flavouring ingredient is added, the most common of which is vanilla, a substance likely to disagree with the stomach, and to produce a train of nervous symptoms. As a common beverage, chocolate is objectionable; it contains an oil which is difficult of assimilation, and therefore oppresses the stomach.

Cocoa—is prepared from the ground seeds of the cocoa tree by mixing with other ingredients, as starch &c. It contains less of the oily matter than the chocolate, and is therefore less likely to disagree with the stomach.

Alcoholic Drinks—have been treated of pretty fully in previous pages, therefore it is unnecessary here to comment upon them.

Oleaginous Articles—Of these, butter is the article most commonly used in diet.

CHAPTER IV.

TEMPERATURE—CLOTHING—CHANGE OF AIR.

The amount of animal heat in the internal organs of the human body in all countries, in every variety of climate and every change of season, in summer and in winter, under the burning atmosphere of the torrid zone, and in icy Lapland, is the same. By natural and artificial means, is this internal temperature maintained, and its disturbance resisted; in hot climates or seasons, perspiration is set up to a degree proportionate to the atmospheric heat; in cold, recourse is had as well to artificial clothing and artificial heat, as an increase of organic activity, in order to preserve the animal temperature at one normal state; and whatever disturbs this state necessarily, interferes most perniciously with the bodily functions. Though the healthy and robust possess strong powers of resistance to such disturbances, yet we have daily evidences to what an extent the physical energies of invalids are prostrated by them: to the one the cold and bracing air of a winter's day imparts that elasticity of action, that general glow of animation, which removes the sense of labour from even violent exertion; while to the other the same degree of

atmospheric temperature is either insupportable, or attended with most injurious consequences.

A proof of the effect of low temperature, in the abstraction of animal heat from parts of the human body, may be seen in the familiar example of our own red noses on a frosty day, as soon as that conspicuous feature is sensible of the presence of cold, it immediately telegraphs off, as it were, a message, intimating to the sensorium the attack, and calling for succour: the brain promptly issues its commands, and straightway a plentiful supply of blood is directed to the capillary or hair like vessels traversing and ramifying over and through the injured organ, and a process of excitement is at once set up by way of resistance to the enemy. And as with the nose, so it is with all other parts of the body directly exposed to cold in a state of nakedness, or to a degree, by insufficient clothing. Wherever proper protection is not afforded, the abstraction of heat is the consequence, and, if it proceed to excess, disturbance of health comes on as an accompaniment.

The costume of all countries was originally adapted to the varying peculiarities of climate, and, whatever be the diversity of modes, designed as a protection to the body against atmospheric inclemency, vicissitudes, condition, and changes. In direct proportion as the atmospheric temperature is low or high, so should be the clothing regulated for imparting warmth. Fashion and fancy are continually altering the mode of dress; but the amount of clothing should be dependent upon the temperature of the climate. The temperature is of relative import, depending not so much on a thing *imparted* as upon the disposition of the air to *abstract* from the body the heat present. The bar of iron that we touch on a cold winter's morning is not really colder than a piece of wool,

both being of equal temperature, but the impression caused on handling is dependent on the relative conductile power being greater in one than the other: the iron absorbs heat with greater rapidity than the wool, and hence we have a vivid sense of cold immediately on touching that metal: while in the other instance we bear with composure and with even little impression the contact of the wool, in consequence of its being a bad conductor and therefore an inapt transmitter of heat.

The skin, is composed of three layers, and varies from one fourth to one eighth of an inch in thickness, it is not only a simple covering for the body, but it has a very important office to perform in the animal economy; each square inch of the skin contains 3,500 sweating tubes, or perspiratory pores, each of which may be likened to a little drain pipe, one fourth of an inch long, making an aggregate length on the entire surface of the body of 201,166 feet, or a tile ditch, for draining the effete fluids from the body, almost forty miles long; it necessarily follows, that anything which disturbs the free exudation of the fluids materially disturbs the circulation. The effect of cold on the skin, is seen in the constriction that immediately takes place in all parts that may happen to be exposed to it; and the appearance which it assumes, known by the name of goose-skin, is an evidence of this constriction; as the skin thus becomes shrunken and contracted in extent, the *pores* must necessarily become closed to a degree that prevents the escape of the perspiration; and this unnatural detention must affect the balance of power that ought to be maintained in the circulation: this great function becomes immediately affected, and wherever there is functional derangement of any kind produced, something is certain to give way, some part is sure to suffer. Let the reader

ponder over the following lines, which are reprinted from the *Australasian* of July 20th, 1872, on—

THE SKIN.

There's a skin without, and a skin within,—
A covering skin and a lining skin ;
But the skin within is the skin without,
Doubled inwards and carried completely throughout.

The palate, the nostrils, the windpipe, and throat,
Are all of them lined with this inner coat ;
Which throughout every part is made to extend—
Lungs, liver, and bowels, from end to end.

The outside skin is a marvellous plan
For exuding the dregs of the flesh of man ;
While the inner extracts from the food and the air
What is needed the waste in his flesh to repair.

While it goes well with the outside skin,
You may feel pretty sure all's right within ;
For if anything puts the inner skin out
Of order, it troubles the skin without.

The doctor, you know, examines the tongue,
To see if your stomach or bowels are wrong ;
If he feels that your hand is hot and dry,
He is able to tell you the reason why.

Too much brandy, whisky, or gin,
Is apt to disorder the skin within,
While, if dirty, or dry, the skin without
Refuses to let the sweat come out.

Good people all have a care of your skin,
Both that without and that within ;
To the first you'll give plenty of water and soap,
To the last little else beside water we hope !

But always be very particular where
You get your water, your food, and your air ;
For if these be tainted, or render'd impure
It will have its effect on your blood be sure.

The food which will ever for you be the best,
Is that you like most and can soonest digest ;
All unripe fruit and decaying flesh
Beware of, and fish that is not very fresh.

Your water transparent pure and as you think it,
Had better be filter'd and boil'd ere you drink it,
Unless, you know surely that nothing unsound
Can have got to it over or under the ground.

But of all things the most I would have you beware
Of breathing the poison of once breathed air;
When in bed, whether out, or at home you may be,
Always open your window and let it go free.

With clothing and exercise keep yourself warm,
And change your clothes quickly if drenched in a
storm,
For a cold caught by chilling the outside skin,
Flies at once to the delicate lining within.

All you who kindly take care of your skin,
And attend to it without and within,
Need never of small-pox feel any fears,
And your skin may last you a hundred years.

The great object of clothing is to afford that protection to the skin, which shall prevent the loss of an undue amount of the animal heat, and to allow the unobstructed escape of what is called *insensible perspiration*, that is perspiration which is constantly passing off from all parts of the body. Art has wrought wondrous fabrications of materials as substitutes for the fish skins and furs employed by the ancients. The desirable property of clothing is that it shall impart warmth, or, rather that it shall prevent the too rapid radiation of animal heat, without burdening and weakening it with a heavy load of substances calculated to interfere with the activity of the limbs and cripple their motions.

Where poverty does not prevent, nor fashion interpose, we find that every one is so clothed as best accords with nature's claim for clothing, varying according to the climate in which he lives, and also to the temperature; he does not add to or diminish every time the thermometric scale indicates a change of a degree; but, at every important variation, so will he vary his clothing as perception, and the sense of comfort, dictates. It is in the upper classes of society, and especially among the female portion of European cities, that, moved by the iron laws of fashion, this pernicious abandonment of salutary attention is most

conspicuous. If truth could be fairly stripped, it is most likely we should see, that the costume of either sex depends in character and mode upon what each deems most pleasing to the other's eye; and yet we must surmise that this cannot be, else surely ladies would never dress as they do. Of all the evils of latter-day fashion for females none are so great as that one constricting the waist and so altering the form of the human body; with what anxiety and at what cost of comfort do they not strive to attain to the smallest possible amount of diameter! Waists of women of twelve stone weight, with a circumference not exceeding eighteen inches—when in their natural state they should measure at least twenty-five inches, and, yet, who, knowing its effects, can esteem it a grace?

If there be one part of the human frame more than another that most needs the protection afforded by covering, it is assuredly the whole region of the throat and chest, and this, of all other parts, seems most neglected. The upper lobes of the lungs are situated in the chest immediately against the collar bones, so that unfortunately a considerable portion of that organ is inadequately secured, by clothing, against the weather. If we compare the high dresses usually worn in the morning, the neck carefully protected, and the chest duly defended against the few aggressions which can be made in the regular temperature of home apartments, seldom quitted in the earlier portion of the day, with the afternoon and evening attire, when a great part of the surface of that important region of the body is carefully unclad, and either not protected at all, or covered by such fabrics that their entity is frequently doubtful, it will not be difficult to imagine how highly pernicious must be that “dress” more properly called “undress” not only in relation to its own inaptitude, but

by contrast with the discarded warm clothing of the morning.

How many thousands of victims to pulmonary consumption may trace its origin to a "season in town," the pleasures and *gaities* of which may *only* be enjoyed by the pernicious and perilous exposure to daily and nightly alternations of temperature in insufficient clothing! Emerging from apartments heated by numbers and action, into a temperature twenty or thirty degrees lower: and in their ride homewards inhaling an atmosphere, which is cold, moist, and impregnated with all manner of evil, the miracle is not how pulmonary disease should, under such circumstances, be induced, but rather how it could be otherwise. How little do mothers think, as they bend in anxious solicitude over the sick bed of a beloved child, that her wasted frame and ruined health are the consequences of parental incaution, the inevitable result of the neglect of clothing in changes of temperature, which instead of being prohibited, was perhaps more than countenanced! Nature is wonderfully provident in all her designs; but, though she permits the African native to live unclad, it does not follow that we in England may dispense with our clothing, or even a part of it. We must conform ourselves to the climate we live in. We certainly have the power of accommodating ourselves to extraordinary changes of temperature and condition, but only by *degrees*: by degrees, we might accustom ourselves to inspire the breezes of the North Pole with Captain Sir G. Nares; or to discuss our mutton chop under an African sun; yet, when heated to the perspiring point, we dare not *suddenly* swallow an ice cream, without greatly imperiling the body. Therefore, as we live in a variable climate, we must adapt ourselves to every important atmospheric change; the neglect of which,

sooner or later, will inevitably lead to the disturbance of the body's equilibrium.

There is another point which ought to receive much attention: namely, the importance of wearing shoes and stockings of material stronger than is generally used. These portions, especially, of a lady's attire, are generally far too thin and weak to resist the damp and cold which so often occur in this country. The sympathy between the feet and the surface of the body is great; so that if the former be cold, generally, the temperature of the whole skin is affected; and from the consent existing between the skin and the lungs, the effects of cold, chest affections, etc., arising from getting wet, damp, or cold in the feet, are attributable. In cold, damp, wet weather, especial care should therefore be adopted, by wearing good strong shoes and thick woollen stockings, so as not only to prevent the wet, but to retain the natural heat of the feet. This precaution will be found an effectual antagonist to the aggression of *colds*. The blameable absurdity of sitting in damp shoes or stockings, is too proverbial to be dilated upon.

The *feelings* of every individual, healthy or invalids, will be the best criteria of the description, and quantity of clothing most suitable to their condition, changes of climate, season etc.; therefore I need not here go into such particulars; if they will only pause and reflect, *prudence*, like the voice of conscience, will whisper what is wisest and best.

Though insufficiency of clothing is necessarily attended by evil consequences, we must not proceed to the other extreme, of using an amount of clothing in excess of what is absolutely required, which is equally pernicious, as tending to relax and exhaust the system, and to produce

susceptibility to injurious external impressions, and may induce a predisposition to those diseases which attack debilitated constitutions. Carefully avoid alterations of light and heavy clothing; shocks imparted to the system by such changes, the sudden chills, and the checks given to perspiration, are dangers of too great importance to be overlooked. Let the attire be adapted to the climate, season, and situation in which we are placed. SENSATION will be a perfect and unerring guide in regulating it. Disregard of proper attention to dress must eventually lead to ill consequences.

Young persons are generally apt to be too inconsiderate, or too confident in the strength of their constitutions, and are disposed to disregard the regulations of maturity; but if this sound caution in matters of dress cannot be induced through the agency of reason, parents and heads of families should have recourse to a little gentle compulsion, by way of enforcing the *necessity*.

Allow me, whilst alluding to the attire of young persons, to make a few more remarks upon a habit as common as it is absurd—tight lacing—unfortunately very prevalent during the growing period of the female sex.

In whom rests the sovereign power that rules the mode, that power is no less despotic than its wisdom is oftentimes sore at fault. In civilised society, *nature* is most uncivilly treated, and *art* does all she can to abuse her.

The ribs are flexible and therefore admit of contraction by artificial means; and when pressure is applied externally, by means of stays and corsets, the cavity is proportionately lessened in capacity. The chest being the habitation of the lungs, and from the peculiar action of that organ, an ever-continuous expansion and contraction are necessary to the performance of their functions.

It is evident, from their structure, that nature designs the alteration in capacity and extent of surface, to be freely performed in carrying on the process of life, and that any disturbance or impediment to their exercise would be injurious to the vital powers. Regarding the configuration of the chest, in its natural state, it will be seen that the lowermost portion of it is much larger in diameter than the upper portion:—on the other hand, if you will take notice of the first fashionable young lady you may meet, you shall find that *art*,—perverse, revolutionizing art—has turned nature upside down, the figure being entirely reversed.

Nature, generally, is exceedingly kind and good tempered. She will do what she can for her refractory children, but they must not abuse her too long or too much, or she will assuredly take a fit of sullenness. The lungs, cramped, fettered, and jammed as they are by these mechanical means, have had no fairplay for many a season, and only require a puff of cold damp air as an exciting cause, and her powers will become prostrated, and the disease will be a hundred-fold more intense, than in those who have not suffered from mechanical impairments.

Sir Benjamin Thompson by a variety of experiments on the relative power of absorbing moisture from the atmosphere in different substances—as wool, fur, hair, silk, cotton wool, and linen—has found, contrary to what was supposed would be the result, that of these substances, woollen cloth, absorbed most, and linen the least; and hence this gentleman justly infers the vast advantage of flannel next the skin; were it universally practised a multitude of diseases, would be prevented, and instead of being too hot, it is well known that it promotes evaporation, and evaporation produces cold. Females of a delicate consti-

tution really require some under clothing in addition to what is usually worn, let me, therefore, recommend them to wear flannel next the skin; its principle advantage being its non-conducting property; it is, therefore, well calculated to protect the body against the too rapid escape of the animal heat.

In all sudden transitions from one extreme of temperature to another, the greatest possible attention ought to be paid to a corresponding alteration in dress, so as to accommodate ourselves to the change. The rash and bold may boast that *they* can leave a well heated apartment and go into a cold damp atmosphere without protection of additional garments, but it will be only for a time; a day will come when they may be undeceived, and when they will express regretfully “ah! I wish I had acted with discretion in my earlier days, I know now the value of my boast.”

The regulation of the temperature of our apartments requires great care, especially in damp and wet seasons. I would also strongly protest against the common practice of leaving a comfortable drawing or sitting room, and retiring to a cold and miserably damp sleeping room; by all means let a fire be lighted in the sleeping room, an hour before retiring to it. Damp sheets, damp linen, are the very lairs in which the grim destroyer hideth his most deadly weapons.

Do not presume that I am recommending such a degree of caution in dress and household regulations as would unfit us for those encounters of atmospheric changes to which we are all more or less exposed. To say that we should flee from every gentle shower of rain or avoid every breeze that blows would be preposterous. What I urge, is, that we should use common sense, and place ourselves in the best possible condition to resist the extremes of

atmospheric change, which, unresisted, tends to act injuriously to health, or predisposes the body to structural disturbance. To all, I say, shun every relaxing indulgence, be not rash or indiscreet, take every precaution in your power to avert disease.

CHANGE OF AIR.

Change of air is a popular, and when well directed, very powerful remedy, in a numerous class of chronic ailments, and in some acute diseases; and in a state of convalescence from disease generally. Its influence also is, perhaps, more remarkable in removing that condition of the system, which may be termed rather deterioration of health than a formal disease, and which is occasioned by confinement or sedentary habits, or residence in impure air.

The striking improvement produced in the health by a removal, for a few weeks only, from the tainted atmosphere of a large city or town to the pure and invigorating air of the country, is the subject of daily observation. Even a change from one part of the country to another is often attended with remarkable benefit, and when there is little or no apparent difference between the two situations.

The beneficial influence of a mild warm atmosphere on such extensive surfaces as the skin and the respiratory organs, by increasing the circulation of the blood, and consequently relieving internal excess of blood, by diminishing the irritation which may be present in the air-passages and lungs, and the effect on the nervous system, occasioned by change of scene and employment, the removal from the usual cares that attend business, and the exhilaration of hope, must needs be great; whilst on the other hand the change to a raw, humid, and impure air, cannot fail to be conversely deteriorating and injurious.

In health, the injurious effects of an impure atmosphere are more easily resisted, and less conspicuous, but in illness these are more immediately perceptible. Whilst under even ordinary circumstances the beneficial influence of change of air is remarkable, that influence is rapidly and vividly perceived during indisposition, and it is sometimes, therefore, recommended under conditions which do not justify the advice. Every thing depends upon the state of the patient and the atmosphere into which he or she is about to be removed

Let me strongly enjoin, upon patients submitting themselves to change of air, the necessity of adherence to proper diet, and such a degree of exercise as the nature of their complaint may allow. Keep out of all damp air which is full of mischief, and often the parent of tremendous evil, a fact asserted and known by all whom experience has made wise.

CHAPTER V.

EXERCISE.

Exercise both for the body and mind, is an essential requisite for the perpetuation of healthy life. Says Dr. Thomas on exercise—"The labourer is apt to murmur that he is necessitated to earn his bread by the sweat of his brow; and looking round on his superiors, he repines at his condition and station, considering that as hard and afflicting which infinite wisdom has destined to be absolutely the only method by which he can be put in possession of the chief of all earthly blessings—a sound body and a quiet mind; for those whom poverty obliges to labour for their daily bread are not only the most healthy, but, all things considered, generally the most happy."

"Toil and be strong. By toil the placid nerves
Grow firm and gain a more compacted tone;
The greener juices are by toil subdued,
Mellow'd and subtilized; the vapid old
Expell'd, and all the rancour of the blood."—*Armstrong*.

A large amount of nervous energy is distributed to the organs of voluntary motion, and in every part of the body we find that nature imparts her powers in proportion

to the degree of exercise which these organs perform; thus, in good pedestrians we find the muscular energies of the legs have become, by long continued practice, singularly developed, compared with those of the arms, and body; the skin of the field labourer, exposed to every alternation of weather, becomes thickened to almost the consistence of horn, whilst that of the gentle drawing room loiterer dwindles into delicacy and tenderness. So also with the glandular system: those glands which are excited into most frequent action increase in strength and structure, whilst those, on the other hand, that are rarely employed, fade gradually away into the mere vestige of what they should be.

It is quite clear, therefore, that if the organs of voluntary motion are not brought into that necessary degree of active exercise which, by the nervous power distributed to them, they are evidently desired to perform, the general health of the body must eventually become affected to an injurious extent, the great law of organic structures apparently being, that whatever destroys the harmonious action which should necessarily subsist between all and every function, whether by the exhaustion of excessive use or the decay incident to non-employment, inevitably leads to evil.

Man was never designed for a state of inactivity; the tranquil sensations produced by moderated exercise, the comfortable repose to which it conduces, the cheerfulness of mind, the regularity of action in all the vital functions, and the successful resistance of many exciting causes of disease, are results that manifest how strongly the constitutional powers are fortified by well tempered activity; whilst indolence of habit, on the contrary, invariably tends to produce organic disturbances, such as congestion of the

liver and abdominal organs, corpulency, apoplexy, derangements characterized by partial loss of tone of the nervous and consequently the vascular systems, and a general susceptibility to morbid impressions.

In a work published in Philadelphia, U. S. entitled "Health and Beauty" the following occurs:—"When three years of age the subject of this brief history could scarcely stand; at five he walked badly, when supported by leading strings; and it was only after dentition, seven years old, that he could walk without assistance; but even then he frequently fell, and could not rise again. Given up by the Physicians he continued in this state until the age of seventeen, when the loins and lower extremities could scarcely support the upper part of the body. The arms were extremely weak, and contracted, the approximation of the shoulders diminished the capacity of the chest, impeded respiration; the moral faculties were quite torpid, and, in short, nature was at a stand still. In the month of November 1815, this unfortunate youth was presented to Mr. Clias, the celebrated superintendent of a gymnasium then at Berne, in Switzerland, as he afterwards was of others in Paris and in London. On being admitted, his strength was tried, and the pressure on the dynamometer was only equal to that of a child seven or eight years old. In ability to pull, ascend the ladder, and jump, he was utterly deficient. He ran over a space of a hundred feet in one minute and two seconds, and could not stand when he had finished. Carrying a child of fifteen pounds made him totter, and a child of seven years old threw him with the greatest facility.

"A person of the other sex, thus enfeebled, would be thought by a committee of cronies and mantua-makers to whom probably she would be consigned, to require, of

absolute necessity, the *support* and *comfort* of corset busks. Her physician would prescribe tonics and sea bathing, and a generous regimen; not bad things in their place, and with suitable hygienic aids, but quite unfitted to prevent the increasing debility and superadded deformity from the use of exercise. But to return to the poor feeble youth. Was any effort made to strengthen his back by compression of its muscles, or to take off from the weight of his head and chest, and by various mechanical contrivances? Captain Clias did not put faith in the doctrine, that, to give muscles strength, they must not be used at all; but he believed that the feeble imperfectly developed ones of this young invalid might be made to grow and acquire strength, on the same principle as that by which the legs of a dancer and a porter, and the arms of bakers and boatmen, become full, muscular, and strong. His scholar was subjected to the gymnastic regimen for five months; after which period he could press fifty degrees on the dynamometer; by the strength of his arms he raised himself three inches from the ground, and remained thus suspended for three seconds; he leaped a distance of three feet; ran a hundred and sixty three yards in a minute, and carried on his shoulders a weight of thirty five pounds. Finally, in 1817, in the presence of several thousand spectators, he climbed to the top of a single rope, twenty five feet high; he did the same exercise on the climbing pole; jumped with a run six feet; and ran over five hundred feet in two minutes and a half.

“Subsequently, when he became a clergyman, in a village near Berne, he could walk twenty four miles on foot without incommoding himself; and the exercises, which he always continued, have given him, in place of his valetudinary state, a vigorous constitution.”

Where our occupations in life necessarily interdict bodily exercise, at the periods of being engaged upon them, we should be careful to employ such counteracting influences as occasion may admit; thus, if clerks, and others who are often injured by continued stooping in a sitting posture, were to vary their position by sitting at a raised desk, much benefit would be derived from the temporary suspension of the accustomed position. When the opportunity occurs, persons compelled to sedentary employments should take as much exercise as possible, before and after the labours of the day; and no exercise will be found more beneficial than sharp walking in the open air.

The actions of walking, running, and leaping, not only tend to regulate the general circulation and the local expenditure of nervous energy, but also to increase the strength, and conduce to a more energetic action of the lungs. The respiration becomes quickened by muscular action; we inhale more vehemently, consequently the blood receives a greater degree of arterialization, as instanced by the expanding colour in the cheeks; and the lungs are excited to a degree of action which, if not maintained to exhaustion, is attended by general benefit. The necessity for this occasional exertion of the lungs is instanced in early life by the proneness of infants to paroxysms of crying, induced, not altogether by pain, but rather as an energetic effort to expand and invigorate the pulmonary organs. Sir Henry Holland, in his "Medical Notes" says:—"might not more be done in practice towards the prevention of pulmonary disease, as well as for the general improvement of health by expressly exercising the organs of respiration—that is, by practising according to method those actions of the body through which the chest is part filled or emptied of air? Though suggestions to this

effect occur in some of our best works on consumption, as well as the writings of certain continental physicians, they have hitherto had less than their due influence, and the principle as such is comparatively little recognized, or brought into general application. In truth, common usage takes for the most part a directly opposite course; and under the notion or pretext of quiet, seeks to repress all direct exercise of this important function, in those who are presumed to have any tendency to pulmonary disorders . . . As regards the modes of exercising the function of respiration, they should be various, to suit the varying powers and exigencies of the patient. Reading aloud, is one of very ancient recommendation, the good effects of which are not limited to this object alone. It might indeed be well were the practice of distinct recitation, such as implies a certain *effort* of the organs, beyond that of mere ordinary speech, more generally used in early life, and continued as a habit, or regular exercise, *but especially by those whose chests are weak*, and who cannot sustain stronger exertions. Even singing may for the same reasons be allowed in many cases, but within much narrower limits, and under much more cautious notice of the effects, than would be requisite in reading. If such caution be duly used as to posture, articulation and the avoidance of all excess, these regular exercises of the voice *may be rendered as salutary to the organs of respiration*, as they are agreeable in their influence on the ordinary voice. The common course of education is much at fault, in this respect."

Literary and scientific men suffer much, not only from over exertion of the mental powers, but from the strained unnatural position of the body; as well as the want of general muscular activity; clerks and various artizans, such as tailors, shoemakers, watchmakers, etc., suffer also

from the same cause. The bent sitting posture when long or habitually continued, by reason of the pressure upon the stomach and other organs, is productive of evils such as dyspepsia, diarrhoea, headache, etc., and in clerks and others, when the pressure is increased by leaning the breast bone upon the edge of the desk or table, pulmonary consumption, nervous palpitations, heart disease, brain exhaustion, etc., very frequently ensue.

Morning exercise (walking, running jumping, or other athletic exercises) in the open air, at the expense of one hour stolen from the allotted period of sleep, will impart to persons in sedentary employments a sustaining influence throughout the labours of the day, which will be found positive in promoting health, and likewise refreshing: the same remark is equally applicable to young persons, male or female. Parents! do not injudiciously enforce upon your children too rigorous an exclusion from out door exercise; hundreds of children are suffering from disease, caused by keeping them indoors too much.

Where the necessity or inclination for labour no longer exists, indolence is too frequently the consequence, and when this disrelish for proper employment is induced, both mental and physical disturbance takes place, such as dullness of spirit, apathy, impatience, nervous affections, indigestion, sluggish action of the liver, melancholy, etc. Wealth is often found to be a curse rather than a blessing. Labour is absolutely necessary for the maintenance of health and happiness.

SLEEP.

Strict attention should be paid to regularity in sleeping hours: among all our wilful indiscretions few are more **certainly** calculated to injure the constitution at some

period of life or another than the violation of that law of nature which imposes the necessity of sleep in timely and stated seasons.

It has long been known that the oxygen taken in during the act of breathing, plays a very important part, inasmuch as through its union with the substance of our bodies the vital forces are kept going. In every process of life, however insignificant, a certain quantity of oxygen is consumed. It is, in a sense, the steam power by which the living machine is driven, and the amount used can be measured by the amount of carbonic acid generated, and set free, in the act of expiration. For this purpose Pettenkofer of Munich has ascertained, unexpectedly, the fact that during the day we give forth proportionately much more carbonic acid or in other words, consume much more oxygen than we receive during the same period. From this interesting fact there naturally arises the important enquiry, by what means is this daily deficiency supplied? Here, also, Pettenkofer, in his researches gives us a satisfactory answer. Sleep is the prudent minister of finance, who every night, by a wise economy, makes up the losses of the day, for in sleep we do not only consume half as much less oxygen as we do in the day, but we take twice as much as we do when we are awake. During sleep, then, we lay up a store of oxygen which enables us without fear to look forward to the deficiency of the morrow.

Therefore, sleeping apartments ought always to be capacious, well ventilated, and dry; many persons are prone to the pernicious habit of closing the bed curtains wholly around them, and thus, "cabined and confined," continue to breathe, during the greater portion of the night, the enclosed atmosphere, vitiated, poisoned, by their own respir-

ation, and when they wake in the morning, they are as languid and weak as before retiring the night previous. The bed clothes should be as light as may be consistent with necessary warmth.

The organs of sense and of motion, wearied by daily exercise, of necessity require the refreshment of proper rest to fit them for renewed activity; but if that repose be impeded, debility in the nervous and muscular energies cannot fail to result. It is not only necessary that sleep should be allowed to endure for a number of hours, but that the period should occur at intervals uninterrupted by irregularities. The habits of social life too frequently interfere with the regularity of our sleeping hours, and the headaches, lassitude, and general torpor which are experienced upon rising from our pillows after the late pleasures of the preceding evening, are a familiar example of the injury inflicted, and of the insufficiency of the rest received, though the actual amount of sleep may have greatly exceeded the time generally allowed. As the vital energies are thus impaired by fatiguing employment, it is easy to infer that they become less and less able to resist the attacks of disease that accident may occasion. Balmy sleep, therefore, should be ever carefully solicited in due seasons and proportions, not only as a source of present refreshment and comfort, but as a means by which disease may be powerfully resisted.

Too much sleep is as pernicious as too little; the horizontal position continued for any length of time tends materially to affect the circulation of the blood, by gravitation becoming improperly determined. It predisposes the persons who take an inordinate amount of sleep, to apoplexy, paralysis, softening of the brain, etc.

Early rising has its inspiring influence on both mind and body; it promotes cheerfulness of temper, opens up

new capacities of enjoyment, and channels of delight to which the sluggish must be insensible.

CLEANLINESS.

To the skin, as we have before stated, is ascribed one of the most important functions of the animal economy. From the intimate sympathy that exists between the skin and the lungs, with which it is connected by a free intercourse of vessels, any deficiency or excess in the exhalation of either organ, is reciprocally compensated by the other. When the vessels or pores of the skin are contracted by cold, a larger amount of work is thrown on the lungs, and not unfrequently they become congested. It may be here remarked that though consumption is prevalent in all cold and variable climates, yet, it is almost unknown in warm and temperate climates, where the work of the skin is constantly going on, and consequently a proportionate diminution in the labour of the lungs; it is on this account that diseases of the surface in such temperatures are very prevalent.

It is not only necessary, therefore, that proper attention be given to diet, clothing, and exercise, but, that to secure health, the peculiar offices of the skin should be assisted and promoted not only by natural, but also by artificial means. The functions of the skin are of course, generally alike in all, yet they vary very much in different individuals, from peculiarities of organisation and employment. Instances of remarkable difference in the substance of the skin are very frequently met with, in some it is of very great thickness, while in others it is the contrary extreme, very thin and fine; these and other varieties all indicate the nature of the attention which should be paid to induce the healthy performance of those functions which are its peculiar attribute.

Cold bathing.—To all persons, and especially those predisposed to chest affections, bathing in one or other of its forms will be found to act as a most important opposing force. The manner in which it is employed may vary from direct immersion, to sponge-bath. Persons of strong constitutions may with benefit use the plunge-bath, but for invalids I should recommend sponging the body with water, or vinegar and water; in the first instances of the employment of this means, using tepid water, proceeding by degrees to a colder temperature, until it can be borne at its natural state of coolness without distress: this form of bath should always be used in the morning immediately on getting up, while the body still retains all the warmth of the bed, and for five or ten minutes at a time. The body may be fortified against the chill by taking a dose of my Compound Essence of Cocaine, reaction will speedily succeed, and an animating and refreshing glow will follow, which is most comforting to the feelings and most healthy.

Vapour bathing possesses the twofold virtue of exciting a healthy action in the skin—promoting the circulation of the blood, detaching scurfy particles and thoroughly cleansing it throughout its whole extent—and of dispersing inflammatory conditions of the lungs, and the mucous membranes of the air passages, etc., fevers, gout, rheumatism, acute and chronic affections of the joints, indigestion, etc. To persons not possessing vapour bath apparatus, the following simple instructions and directions, if followed, will be found all that is necessary for the guidance of those desirous of administering a vapour bath:—

Get a pan, heat two bricks to redness in a good fire and put into the pan, over which place a cane seated chair, let the patient sit on the chair, and throw good thick blankets round him, and adjust them about the neck, then lift up

one corner of the blanket and pour on to the bricks a quantity of boiling water, or what is better, a decoction of mugwort, yarrow, or featherfew herbs,—re-arrange the blankets so as thoroughly to enclose the patient in the steam; the bath may be continued for from ten to thirty minutes, if the heat is not kept up for a sufficient time, another hot brick may be put into the pan. During the bath, let the patient take a dose of the compound Essence of Cocaine (in warm slightly sweetened water) which will raise the internal temperature of the body, and thus prevent fainting. On coming out of this vapour bath, it is advisable to sponge the patient's body and limbs with cold or tepid water, or vinegar and water; afterwards, let the surface be well rubbed with a course dry cloth.

Cleanliness of person (which term involves the removal of extraneous substances from the skin) is surely never to be confined to the washing of the face and hands only: when general bathing, either in vapour or in water is not resorted to, the dirt that accumulates on the cutaneous surface must be, and really is, enormous. Cleanliness is indeed a cardinal virtue, for it removes at once the moral degradation arising from the sense of personal impurities, and materially contributes to support the system in a state of undisturbed health; there is an old adage which says, "cleanliness is next to godliness"; but if we were to call it a part of godliness itself, equal in importance to any other part, we should not be claiming too much.

NO. 1—FOR SPONGE BATH.

To one quart of cold water add a cupful of vinegar, a handful of salt (common), and one table spoonful of compound Essence of Cocaine; this quantity will be sufficient for twice. Let the body be sponged with it on rising from bed; after which use dry friction.

No. 2.—HOT FOMENTATION BATH (Medicated).

This form of bath will be found of great value in powerfully diverting the blood from any internal organ that may be the seat of acute disease. Prepare as follows:—Take of either yarrow, mugwort, or feverfew herb, 4 ozs. boil in one gallon of soft water twenty minutes; saturate and wring out flannel cloths and apply over the seat of the inflammation, the cloths should be renewed every five minutes until the desired effect has been produced. Or, this mixture may be used as a fomentation to the feet, in cases of either inflammation of the womb, lungs, or brain.

CHAPTER VI.

TEMPER—INDOLENCE.

The Passions.—The uncontrolled excesses of the temper, the free gratification of passionate emotion, not only tends to diminish domestic happiness, but also to induce disease and abridge life itself. It is in the nature of passion to produce organic changes, to diminish or exhaust nervous power. Every individual unhappily must have experienced at some one or more periods of his or her experience its surprising effect on the body, as instanced by certain functional disturbances; and, such is the influence of the mind over the body, that strong impressions or the instantaneous effects of sudden fright, are sufficient to allay in a moment the keenest sense of hunger. Multiplied instances are on record of the fatal effects of passionate exercises. Violent anger and ill temper, grief and suspense, sudden surprise and fright, and other violent manifestations of the mind, have frequently terminated in fever, apoplexy, madness, or sudden death.

Again, we see how powerful is the influence of the mind over health in the relative circumstances of mankind. Where business cares and anxieties are considerable,—

where difficulties, misfortune, disappointment, domestic bereavements, despondency, or despair, thwart our path, the health is sure to fade and succumb.

Irritability of temper ought, even from a selfish point of view, at all times to be checked. The swelling throat, blanched lip, flushed forehead, fierceness of eye, etc., displayed in an ordinary fit of anger, are sufficient indications of the tumult within, and of the disordered action of the brain, circulation of the blood, etc., consequent upon the fit. Few there are of us so irascible that we cannot check these bubblings of temper *if we like*, at all events to a very great extent:—and, as it is difficult to stop a torrent when in full flow, it is our duty to determine, in those seasons when reason is sufficiently cool, to counsel correctly, to place restraint upon our propensities to passion, which never do good to others and are sure to prove injurious to ourselves.

A serene, tranquil, and cheerful disposition *may be secured by cultivation*; even persons who are naturally of a fretful, peevish, irritable temperament, will be astonished to find how comparatively easy it is to control, and regulate their humours, if they will, with steady perseverance, determine to bring them under domination.

Indolence—The organisation of man's frame is obviously intended for a life of activity. Want of exercise induces indigestion and its attendant evils, by lowering the nervous energy; thus it is that idle people are always complaining of some ailment or other. Those, therefore, who wish really to be healthy and happy, must keep mind and body actively engaged.

None so little enjoy life, and are such burdens to themselves, as those who have nothing to do. The active only, have the true relish of life. He who knows not what it is

to labour, knows not what it is to enjoy life. Recreation is only valuable as it unbends us. The idle knows nothing of it, it is exertion that renders rest delightful, and sleep sweet and undisturbed. The happiness of life depends upon the regular prosecution of some laudable purpose or calling, which engages, helps, and enlivens our powers.

NURSING.

Whenever sensation conveys to the brain a message of approaching harm; that is, at whatever time symptoms of disturbed health begin to display themselves, I earnestly recommend that attention be immediately paid to those comforting contrivances understood by the term *domestic nursing*.

Health is like the weather, we are not aware how soon it may change; a provident traveller will prepare himself for his journey according to the indications of his barometer; and as *sensation* is the only measure by which we may determine a change in bodily health, do not let us disregard its forewarnings, which intelligibly bespeak that some physical derangements are going forward. Do not increase the oncoming evil by affecting a reckless disregard of its probability; but, whilst awaiting the issue, put yourself in the best possible condition of defence in case danger shall in reality approach.

There is a great amount of good common sense in the gruel and foot-bath, going-to-bed, and sweating caudlings, which domestic forethought so persistently wages; would that there were more of it.

In concluding this part, let me urge upon you, reader, the necessity of reflection upon these subjects which so most importantly control the condition of health and the duration of life.

CHAPTER VII.

THEORY OF DISEASE.

Health in man (we here use the term *man* in the abstract, we mean all ages and both sexes; the girl, the boy, the woman, the man, are all different, yet they are the same.) is that condition of equilibrium among all the causes of waste and supply, of all the functional actions of the various organs of the body; which actions are preformed without the regulation of our will, and are carried on unperceived, unfelt, and, in fact, they do not become conscious to us by impressions made upon the sensory organs. But any disturbance of this equilibrium becomes manifest to our conscious intelligence, through the sensorium, as sensation. This sensation indicates *disease*.

We have seen that the exciting *causes* of disease are numerous. The seasons—the earth and its emanations—the air and its varied conditions—the degrees of temperature, dryness, and moisture of surrounding media—the quality, properties, and quantity of our food and drink—the passions by which we are influenced, with all other changes of our collective and individual position; the arrangement of these things influences us either in

maintaining health or producing disease. If any member or organ of the body becomes influenced by some external *cause*, for, I say with Hobbes, that “nothing taketh beginning from itself, but from the action of some immediate agent *without* itself,” the nerves of that organ are excited, this excitement causes a message to be sent to the brain for more force with which to combat the enemy, or influence the organ; the Brain at once sends help and she garrisons all her local forces around the spot, and will never yield until she has either vanquished the foe, entirely, until she has completed her work, or until she has become thoroughly exhausted, and the organ thus becomes predisposed to, or actually attacked by, disease. The force of the disease is in inverse proportion to the amount of Brain or nervous force. The disease becomes manifest to us as sensation, and as the Brain and nervous system does not possess any great quantity of *latent* nervous force, which is ready to be expended in an emergency, it is a fact that the extra amount of nervous force which has been expended on a local spot, diminishes the amount which should be distributed for general purposes. consequently the quantity of nervous influence which can be shed over such functional actions as (supposing the capillaries of the skin to be the part affected) digestion, etc., must be lessened, and therefore, as will be shown more fully further on, those actions will be diminished, or only imperfectly performed. If the functions of digestion, absorption, circulation, secretion, and excretion are abnormal in their action, nutrition becomes impaired, and consequently the various organs and tissues are imperfectly supplied with food, the equilibrium of waste and supply is disturbed, and the organ or tissue predisposed to disease becomes disorganised. Thus this unequal or diminished supply of food to the Brain and nervous system,

among other organs, becomes a further cause of deficiency of nervous force for general purposes, and we have, as a consequent of this mal-nutrition, general depression and emaciation, which if not counter influenced will end in death. But so long as the force of the Brain and nervous system of individuals is of sufficient amount, external circumstances will not produce disease. As we have shown, half a dozen individuals may go out of a hot room into the external atmosphere, where the temperature may be many degrees below that of the room they have just left, three or four of the individuals may be so influenced by the change, as to become seized with one or other of the various forms of disease, according to their varying predispositions, the other two may altogether escape any such unpleasant symptoms, simply because their powers of vital resistance were sufficient to overcome the effects of the sudden change in temperature.

Physicians, generally, divide diseases into two classes—*constitutional* and *local*, and they treat them as such accordingly; but really there is not, and never was, a purely local disease. Doubtless, you will ask if consumption, tooth-ache, or ulcers are not local diseases? Far from it, for it is impossible for such states to take place (unless produced by mechanical injury) without the previous condition of entire constitutional disturbance, which, instead of being causes, as many suppose and teach, are only effects or features—they mistake the end for the beginning—the consequence for the cause—they mistake the decay, or tendency to decay, of a part, for the primary disturbance of the whole. But if we recur to nature, we shall find that the subjects of all such diseases laboured under a general derangement of the whole body, previously to the development of the local consequences from which these diseases take their

designations. This general disturbance is variously named; for myself, I denominate it "Depression of the Brain and nervous system." Thus I contend, a local disease is a mere consequence or development simply,—a termination or effect of continued *depression*. This leads us on to the proposition that we here wish to establish, viz. That

"Disease is the consequence of Brain exhaustion or deficiency of Nervous force."

The Brain is the commander-in-chief of the physiological army, and, together with the various other nerve-centres, unerringly governs the whole working of the local processes, by the transmission of nervous force. All the functions and movements in organised bodies, depend on nervous force for their production and combination. Motion and rest affect the nervous system remarkably. When the body is fatigued by motion, the mind is also fatigued, impressibility of the nervous system is diminished, irritability is diminished, and the secretions are diminished; thus all work implies waste. The work of the nervous system, and that of the muscles implies consumption, either of their own substance, or of something else. And as the organism can make nothing it must possess the means of obtaining from without that which it wants, and of throwing off from it that which it wastes; these things the body does by the process of digestion, circulation, absorption, nutrition, and excretion by the skin, kidneys, and lungs. Thus the waste of force is replenished. Rest is also a powerful remedy for the waste of force and tissue, for in this state, the waste of the body is not near so great as when in motion, therefore the body is replenished, to an extent, because the produce is greater than the waste.

The influence of the nervous system over digestion is manifold; and is manifest to us, first, in the sensations of

hunger and thirst; second, in the secretion of gastric juice; and, third, in the movements of the food in and from the stomach.

The sensations of hunger and thirst are manifested in consequence of a deficiency in the system; the brain refers the sensations to the stomach and fauces. The sensation of hunger is referred to the stomach, but is derived from the system generally. The sensation of thirst is a local declaration of the system, indicating want of fluid. By merely washing the dry fauces the sensation of thirst is relieved for a short time, but by the introduction of fluids into the stomach, or directly into the blood, or by other processes, the sensation will be completely relieved.

The secretion of the gastric juice is greatly under nervous influence. It has been shown by physiologists that by dividing the tenth or pneumogastric pair of nerves, the process of digestion is stopped, and that the mucous membrane of the stomach previously turgid with blood, becomes pale and at once ceases to secrete gastric juice. Irritation of the pneumogastric nerves produces convulsive movements of the stomach. Its movements are stopped on the division of these nerves. It has been shown that the arteries, veins, and capillaries are under the influence of the nervous system, that the state of contraction and dilatation is regulated by nervous force. During health the capillary vessels are kept, by the nervous force, expended over them, in a half contracted state, and a diminution of this nervous force, from the operation of mental or physical causes, produces dilation or enlargement of their diameters. This relaxation admits of a greater flow of blood, with consequent slower and stagnant movements. This depressed state of the nerve influence and consequent morbid state of the blood, lessen the muscular action of the

stomach and diminishes the flow of gastric juice, and we have, as a result, some form of disease. Physical or mental exertion immediately after a meal will frequently produce heart-burn or acidity of the stomach, by withdrawing nervous influence from that organ, thereby diminishing its action, and inducing fermentation and the formation of acid.

The processes denominated nutrition and growth require for their healthy production, a large amount of nervous force; and whenever the normal amount is decreased or depressed, we have either disorganisation, or wasting of tissue, general or local. The reasonableness of this statement is proved by many facts which show clearly the influence of the Brain and nervous system. The influence of the mind in the production, aggravation, and cure of disease is daily observed, and of itself is a sufficient proof of the influence of the nervous system on nutrition.

Independently of mental influence, Brain exhaustion or deficiency of nervous force, caused either by physical labour, or by direct mechanical injury to a local part of a nerve centre, or nerve, is usually followed by defective nutrition of the parts supplied by injured nerves. Thus lesion or irritation of the spinal cord is sometimes followed by mortification of a part supplied by nerves from the cord; Sir B. Brodie mentions a case in which sloughing of the ankle took place within twenty four hours after injury to the spine. And after such irritation the repair of waste in such parts which are supplied with nervous force through the part of the spinal cord irritated, takes place less completely than in others. Wherever the trunk of the trigeminal nerve is injured or divided, in that side of the face supplied with this nerve, nutrition will be morbid and incomplete, and sometimes ulceration of the corner of the eye will take place in consequence of this imperfect nutrition.

A bed-sore is due, not to the pressure of the bed, but, to spinal lesion, or spinal irritation; when, for instance, irritation in the spinal column was produced, a bed-sore appeared, and often on parts not subject to pressure. Bright's disease is another illustration of mal-nutrition caused by the impairment and diminished nerve power supplied to the kidneys, this perverted and diminished nerve-force impairs the integrity of tissue and interferes with cell-life and development, with consequent granular deposit.

All sorts of skin eruptions and blood diseases are traceable to nervous disorder. The primary cause we attribute to some shock or depression of the nervous system which governs the whole process of nutrition, such condition of the nerves may be either hereditary or acquired, but which ever it is, the result is the same: the stamping upon the human organism a diathesis, whether transmitted to the infant, or impressed upon the nervous system of the adult—a condition of the animal economy where blood is manufactured not homogenous in character, but where the corpuscles instead of being round with a depression in the centre, assume every conceivable shape—a condition where these abnormal corpuscles are capable of passing out of the bounds of the circulation, and forming abnormal growths. Under the guidance of nerve force, the various tissues possess the power of eliciting to themselves the material for their own nutrition from the nutritive matter supplied by the blood, and under the mal-condition of the nervous system, the blood is manufactured incapable of fulfilling the ordinary purposes of nutrition, and as the result, we have various skin diseases, ulcers, cancers, etc. Further evidence of the influence of the nervous system on nutrition and disease is furnished in those cases which, from mental

anguish, intense study or pains in the head, the hair becomes grey very quickly, even in a few hours.

The secretions and excretions are likewise under the influence of nervous force. Whatever excites the nerves of a glandular organ, that excitement generally is followed by increase in the secretion. This is illustrated in the flow of tears and the increased discharge of saliva which often accompanies irritation or a paroxysm of neuralgia of the fifth pair of nerves. The quality of a secretion may be also affected by the influence of the mind through the Brain and nervous system, as in cases of depression of nervous force through grief or passion, the secretion of milk is altered, and sometimes so changed as to produce irritation in the alimentary canal of the child, or even death. So many instances are now on record in which children have been suckled within a *short* time after the mothers have been dreadfully terrified or have allowed their passions to rise abnormally, and have died suddenly, or in convulsive attacks, that the occurrence of such cases cannot be set down as produced by any other cause than the depression which has been communicated to the nervous system of the child from the mother. Certain as we are of the injurious effects of less severe emotional influences, or exhaustion of the Brain and nervous system of the mother, upon the properties of the milk in causing disease of the child, varying in character and degree, it does seem likely that the "bland and nutritious fluid" is converted into a poison capable of deadly operation. Here are two examples of such cases: first,—Two days after the birth of a healthy child, the mother, a lady of a refined and cultivated mind, was suddenly informed of the death of a little girl, to whom she was greatly attached, and who had left her in perfect health a few days previous to her

confinement. The infant was seized with convulsions a few hours after being suckled. The attack was referred to the state of the Mother's mind. The attacks frequently recurred, and one proved fatal when about three months old.—(*Brit. Med. Journ.*) Second,—Mrs. A. was sitting in her room suckling her infant, a healthy vigorous child four months old. A neighbour ran in, exclaiming "Johnny (an elder child of Mrs. A.) is run over." The mother, greatly frightened, started up and ran to the door, still suckling the baby, in a few minutes, when order was restored, she looked down at her infant, and was alarmed at its death-like appearance. I saw the child within a quarter of an hour, and found it collapsed and almost pulseless gradually, though slowly, perfect recovery took place,"—*C. T. Brookhouse, M. D.* Certain mental and physical states excite the secretion of urine, as well as the perspiration, and occasional diarrhoea which ensue under the influence of terror. The irritation of certain nerves have the effect of stopping the secretion of urine. The skin is a source of continual loss of effete matter from the system—such as watery fluid, carbonic acid, urea. And the quantity of this sweat—or insensible and sensible perspiration, which is given off, is regulated by the Brain and nervous system, the condition of the blood, and the temperature of the atmosphere. The blood in the capillaries of the skin is separated from the sweat glands by only the thin wall of the capillaries, that of the fine gland and the epithelium, which altogether constitute but a very thin pellicle, and it is through this thin pellicle that the sweat exudes. These sweat glands are greatly under the influence of the nervous system. The practical importance of this control is immense. When exposure to cold gives a man catarrh,

or inflammation of the lungs, or diarrhoea, or some still more serious affection of the abdominal organs, the disease is brought about through the nervous system. The impression of cold made upon the skin is such as to close its pores or sweat glands, and thus prevent perspiration, this impression is conveyed to the Brain or other nervous centres; and the nerves which govern the walls of the vessels of the skin are partially paralysed, and there is produced, by this diminution of nervous influence, undue distention or congestion of the blood-vessels, which commonly ends in inflammation. The effect of a severe chill or shock from cold, damp, air upon the Bronchial tubes and lungs, is such as to produce bronchitis and pneumonia. The depression of nerve power may be so great that the patient is in a few hours in a state of the greatest prostration, with dry and brown tongue, resulting in advanced febrile excitement, with or without cough. In general Brain exhaustion the voice fails; many patients who are suffering from chronic disease are said to die from the supervention of bronchitis or of pneumonia, when the pulmonary condition is really the expression of diminution of nervous force; when there is this depression of Brain force, there is greater liability to affections described as bronchitis and inflammation of the lungs, the power of the respiratory centres being lessened, disturbance of nutrition more readily takes place.

Through the nervous system, Respiration is controlled and the temperature of the body regulated. The respiratory movements and their regular rythm, so far as they are involuntary and independent of consciousness, are under the absolute governance of nervous influence from that part of the Brain called the medulla oblongata, which, as a nervous centre, receives the impression of the necessity of breath-

ing and directs such nerves as will bring into co-ordinate and adapted action the muscles necessary to inspiration. The smallest irritation of the mucous membrane of the glottis is sufficient to excite nervous action, and by a reflex process, a deep inspiration is taken, the glottis is closed and then burst open by the violent compression of the air contained in the lungs, by the contraction of the expiatory muscles, the diaphragm being relaxed and the air is driven through the mouth, the process being called *coughing*.

When the supply of nervous influence to a part is cut off, the temperature of that part falls below its ordinary degree. The heat of the body is produced by chemical processes, which take place in every part of the body. The blood vessels convey the fluid which is heated, they are closed pipes, a number of them are enclosed in the skin and air passages, it is the evaporation from these vessels which influences the temperature of the blood, and consequently of the body. The state of the small vessels—the capillaries—has a greater influence than that of the arteries and veins, inasmuch as exudation takes place more readily from these small vessels than from the larger. But the condition of the walls of the capillaries depends upon the nerves by which they are supplied. Cold affects the nervous system greatly, and gives rise to contraction of these vessels; while warmth has a reverse effect. Thus the supply of blood to the surface is lessened, and the loss of heat is thereby checked, when the atmospheric temperature is low; while, when the external temperature is high, the supply of blood to the surface is increased, and consequently fluid is exuded through the sweat glands, and evaporation takes place, and thus checks any abnormal rise in the temperature of the blood. If ordinary perspiration is checked, depression of nervous force takes place and congestion of

the blood vessels occurs. There exists between the Lungs, Kidneys, and Skin great sympathy, thus, when exhalation by the skin is checked by nervous depression, a larger amount of work is thrown upon the Lungs and Kidneys, and consequently with extra work, we have further depression, and the effete matters, not passing off so quickly as necessary to keep up the equilibrium of the body, we have accumulations of this effete matter in one or more of the various organs of the body, and consequent disease, which had its origin in the insufficiency of nervous force. Or in other words: consequent upon the depression or inharmonious action of the Brain and nervous system, the natural control which it exerted over the various parts of the body, in health, is more or less withdrawn from certain parts; thus, some organs are placed in a state of torpidity, while others act in a manner alike injurious to themselves and the other parts of the body with which they are most nearly associated in function. We find defective nutrition, inflammation of an organ, and spasm, or palpitation of another. In fact, if I may be permitted to use so bold a *simile*, the various organs of the body when beyond the normal control of the Brain, resemble so many race horses that have escaped from the control of their riders—one stands still altogether; another moves forward in the right course, perhaps, but with vacillating and uncertain step; while a third endangers itself and every thing near to it, by the rapidity and eccentricity of its movements.

It will be seen from the foregoing remarks, that every process of the body is regulated by the influence of the force expended by the Brain and nervous system, and whenever that is diminished, we have as a consequence, disease of some kind. These effects may be produced instantaneously or slowly, according to the nature

and extent of the exciting cause. Irritation of the base of the brain is sufficient to cause in a few hours swelling of the knee to doubly its natural size. In a young University graduate, age 19, attacks of the most violent spasm came on in the following manner. He had previously felt uncommonly well, till he fatigued and exhausted himself by a very long walk: the next day he had a fit of difficulty in breathing, and recurring for several days with increased severity. He would suddenly start up, throwing his arms into the air, the face becoming livid, eyes staring; he would then, in the wildest manner, force his hand into his mouth, as if to tear something from his throat; after a few minutes there was expectoration of thick mucus, and a little blood; the attack then gradually subsided. The tongue was clean, bowels rather confined, respiration easy; could swallow fluids, but great sensibility of the epiglottis. After some days of severe suffering he recovered. This is a clear case of spasm of the glottis brought on by depressed nervous energy caused by over work. Any excitation of the motive ganglia, under certain conditions of nervous exhaustion, is competent to induce that special anæmia of the brain which is the physiological cause of unconsciousness and tonic spasm of the whole organism. Thus local inflammation, by inducing a determination of blood to the part, decreases the amount of blood passing through the brain, and therefore diminishing its supply of food—the supply is not equal to the waste going on—and with this continual waste and diminished growth, the brain becomes further debilitated, and unconsciousness is a result of the great amount of influence which has been shed over the local organ inflamed; the brain has really exhausted herself by expending such an amount of influence over the local part, as to diminish the supply of food to

recruit her force, and unconsciousness continues until need for local influence has somewhat subsided—until the blood is allowed to circulate in a more natural manner through the Brain, and it is somewhat replenished with power. Whooping cough has its seat in the medulla oblongata, and is only removed, after restoring nervous influence to its normal condition. A young lady, previously very healthy, was very intent upon her improvement in drawing, and devoted a great deal of time to it, and from the intensity of her study and external circumstances, the Brain and nervous system, generally, became excessively exhausted. In this state a short hacking cough arose, a cough so slight as not to alarm the lady's mother. At length, however, she was removed with the family to a more salubrious part of the country and placed under the care of a celebrated physician, she returned to her native village, where she was attended by two physicians. She died a prey to consumption of the lungs, evidently brought on by Brain exhaustion.

That those diseases termed hypochondria, in man, and hysteria, in woman, have their origin in the Brain and nervous system, a little amount of reflection will convince you. *Hysteria* is a corruption of a Greek word *Hysteria*, the womb; and was a name given to the disease, in females, symptomatically exhibiting lowness of spirits and despondency, with occasional involuntary fits of laughing, crying, sobbing, or shrieking, from a hypothetical idea that in such cases the womb was the principal organ at fault. From the same language we also derive the *Hypochondria*, compounded of the words, *hypo*, under, and *chondras*, cartilage, the supposed seat of the disease being the liver or stomach, which organs are both situated under the cartilaginous portions of the lower ribs. But that the

Brain is the principle organ implicated in these disorders, as in others, may be easily shown. Suppose a letter comes with a piece of bad news,—the patient in that case bursts into tears, laughs and cries for a time, and then sinks into a state of dismal and gloomy despondency, and all this forsooth, according to the teaching of a large number of our present practitioners of medicine you must put down to the state of the womb or digestive apparatus, according to the sex of the patient, instead of placing it to the account of the Brain and nerves, without which the ill-timed letter, the *cause of all*, could not, by any possibility, have affected the mind in the least!

Hence all deviations from nature's equilibrium are but the consequence and result of one internal first cause, that is, Brain Exhaustion or deficiency of nervous force. This statement is not founded on conjecture, and although termed a *theory* yet it is fully confirmed by physiological and pathological research and extensive observations on humanity, alike mental and physical; the history and symptoms of every case fully testify the truthfulness of all statements here made.

In treating of diseases, in the following pages, I shall further show their derivation from Brain Exhaustion.

CHAPTER VIII.

TREATMENT OF DISEASE—ERYTHROXYLON COCA.

Having traced the cause of disease to be Brain Exhaustion or deficiency of nervous force, we will now point out the principle on which is based a method by which disease can be surely and effectually combatted; viz, by the administration of such medicines as will restore the Brain and Nervous system to their normal condition—by such means an equilibrium is restored in the various processes of waste and supply; and on this principle only—by directly aiding nature—can remedial agencies effect a cure. As Dr. Combe says, “Nature is truly the agent in the cure of disease; and that, as she acts in accordance with fixed and invariable laws, the aim of the physician ought always to be to facilitate her efforts, by acting in harmony with, and not in opposition to those laws.” Again, the same writer remarks, “so far from being always necessary to a cure, drugs are required only where the power of nature to resume her normal action proves inadequate, even then it is still nature acting in accordance with her own laws that brings about the cure. She may be aided, but she ought never to be thwarted.”

If, then, disease is a consequence of Brain exhaustion or deficiency of nervous force to keep up nature's equilibrium, it may be asked, what are the remedies which should be used to assist nature in restoring the Brain force to its normal influence over the functional actions of the body? If, to effectually cure disease, nature must be assisted, we ask, "with what propriety do physicians, of the Allopathic school, bleed, and administer such poisons as mercury, arsenic, antimony, etc.?" Nature cures no disease by salivation! Are such mineral agents beneficial in the cure of disease, or, in other words, is it possible that they aid nature by imparting vital force? No, never!

If we refer to the Chemical composition of the blood, it will be observed that certain kinds of material, including certain of the mineral elements,* are necessary for healthy blood, which is of a natural law—a wise provision of nature to establish the growth and maturity of the body; all these elements are obtainable from our food, water, and air, which if of a proper and natural condition will maintain, under ordinary conditions, the body in equilibrium.

Nature thus having established her law, has called together all of the elements that are necessary to establish the wonderful exhibition of human economy. Therefore, all those mineral agents or their elements not found as a component part of the human body, cannot and do not assimilate with the fluids and solids of the system. They may be taken up by the absorbent vessels, carried into the blood circulation, deposited in the solids of the body, as

* The elementary substances contained in the human body and blood are generally considered to be: oxygen, hydrogen, nitrogen, carbon, sulphur, silicon, phosphorus, chlorine, fluorine, potassium, sodium, calcium, iron, magnesia, and manganese. The inorganic elements (*viz.* the seven last named) exist in the body in the form of either phosphates, sulphates, carbonates, etc.

has been observed. And although there are probably some instances where no bad effects have been observed, and where a cure has *seemed* to be effected by the use of mineral poisons, yet, doubtless, the patient has got well in spite of the poisons, and in all probability would have done so, had they never been administered. But although no *observed* bad effects have been produced in such cases, yet, this is not sufficient evidence that no deleterious effects have resulted to the human system. It has been admitted by many recent writers that arsenic, mercury, silver, antimony, zinc, lead, copper, &c., will produce serious and fatal results when given medicinally. Mercury (or its preparations, notably, calomel and blue pill) has been used now for 200 years as the great sheet-anchor of the Allopath; and although the *faculty* see their idol is on the wane, yet they cling to the delusion, fearing that with its fall goes their power to an uncertain degree; and they still ardently press its importance, yet they have sufficient generosity to note its injurious effects. They admit that under its action the Brain and nervous system becomes seriously affected, producing palsy, shaking and trembling; producing an inflammatory crust on the blood, deepening its colour,—its coagulability becomes less and the proportions of clot and serum become altered, and further, “that the whole organic formation of the patient is less consistent and cohesive,” and that the “electrical condition of the blood changes from the negative or healthy state to that of the positive.” The heart and lungs become seriously affected; the urinary organs, the bones, the muscular system become diseased. And in many cases the symptoms produced in individuals who have been mercurialized have been charged upon its victims as being produced by venereal virus. Numbers of cases

have been published where long and lingering, and sometimes horrible, diseases have been produced by the action of mercury or its preparations. Here is an example:—"A lady who, 12 years previous, was taken with a fever, when calomel was prescribed by her physician in small doses. She soon became salivated enormously. The bones of the nose were attacked and nearly all exfoliated. She partially recovered. Her existence was wretched and disgusting to herself; continually harrassed with mercurial, rheumatic, and neuralgic pains. These attacks were upon the periosteum or nervous vascular membrane immediately covering the bones, and towards the close of her life upon the bones of her head, upon various parts of which suppuration and abscesses, followed with heavy discharges, constantly reducing vitality, and closing in death."

Corrosive sublimate and some other mineral agents destroy life by direct action on the mucous membrane of the stomach; and those agents which are taken into the circulation, destroy life by their impression on the nervous system. We believe that no remedy should be used internally whose *elements* are not found in the human body; others cannot possibly act in accordance with the human economy.

Finally, such metallic combinations as above mentioned are, then, capable of inducing such a state of nervous irritation as to be often incompatible with life: the Brain and ganglionic system of nerves is immediately injured by them. Yet these mineral poisons are administered with impunity, by the regular practitioner of medicine, in every form of disease. No matter whether the patient be a sucking child, a delicate female, or a strong man, all are treated alike! true, men recover when treated in this manner; but these are not *cures*, they are only escapes!

Yet such is the prevailing force of custom, prejudice, and so-called education, that the thousands of cases where injurious effects have been *observed* following the administration of these minerals, that, so far from opening the eyes of the general or allopathic practitioner of medicine, the effects thus produced are so marvellous and wonderfully grand (!) that they only serve to confirm him in his error. Lord Byron called medicine “the *destructive* art of healing,” and, considered in the light of the above statements, he might truthfully do so !

Many compounds essentially poisonous in their properties are continually formed in man’s organism during its healthy condition, and the continuance of this condition of health depends upon the equilibrium in the production and excretion of these effete matters. This work of excretion is carried on under the influence of the Brain and nervous system—the influence of that force which is necessary for the healthy nutrition of the body. When, however, this balance is disturbed by anything which depresses nervous force, some matter essential to the production of some other matter becomes deficient, or some *waste* matter collects in undue proportion, and, in either case, other organs and functions than these primarily affected by the disturbance, are drawn into the more active service of the body to restore, if possible, the abnormal condition of the body to a healthy state. It matters very little upon what the exciting cause or causes of the abnormal condition shall first fall—whether directly upon the brain, as passion, or a blow on the head,—or, more remotely, as in the case of a sudden chill of the whole body, mechanical injury to an organ or a joint,—to the consequent derangement of the Brain and nervous system we refer the symptoms. Every individual has some organ of

his body less strongly constituted than the other organs, and in the continual application of exciting causes, need it be wondered that the weak point is often discovered! Is the Brain the least strongly constructed organ? Then, according to the degree of implication there will be produced epilepsy, apoplexy, &c. Is the weakness seated in the Lungs? Then consumption, asthma, spitting of blood, &c., may be looked for. Perhaps the heart is pre-disposed—then we may have palpitation, &c. Or the joints may be the parts which are weakest in the patient? then there may be swelling, pain, &c.—rheumatism. Then the old school practitioner gives mercury or some other such depleting drug, directing his whole thought and action to the state of the joint, without once allowing the Brain and nervous system—the organs upon which every motion and condition of the body, right or wrong, depend—to have one moment of his attention; he never dreams of influencing this key to all the actions and conditions of the body, in any manner whatsoever. And what do we have as a result of this treatment, or, rather, mal-treatment? Why, sad to say, the health and happiness of the patient, in a large per centage of cases, is ruined, and that for life!

Our views of pathology, which physiological reasoning or deduction has demonstrated to be correct, naturally lead us to the selection of such drugs as aid nature in recovering her natural equilibrium—by imparting vital force, and thus recuperating the exhausted system. Although our *materia medica* includes many valuable remedies for human affliction, it is a matter of certainty that in all cases where the animal vitality is failing, or where exhaustion or disease exist, *Erythroxylon Coca* is decidedly superior to every other remedy at present known. It will work effects such

as no other single drug will produce, and it possesses the great advantage of not causing, when its use is relinquished or discontinued, the slightest reaction or depression. So valuable are the properties, and so extensive the field in which this new remedy may be employed in the amelioration of human suffering, that the author now brings it before the public, in the hope that a great amount of present affliction may be removed, and, in the future, prevented.

ERYTHROXYLON* COCA.

This shrub grows luxuriantly in the elevated forests on the slopes of the Andes, South America; and is highly valued and cultivated by the natives of Peru, Chili, and Bolivia. It ordinarily grows to a height of about eight feet. "Leaves alternate, one and a half to two inches long; membranous, flat, opaque, acute at both ends, the apex almost mucronate; quite entire, dark green above, pale beneath, three-nerved in the middle, (a strong midrib on each side of which is a fine vein, *Auth.*,) with fine connecting veins. Petiole two to four lines long, with a pair of intra-petiolary ovate-lanceolate brown acute stipules, upon the back of the outside of which, indeed, the petiole is articulated, and from which the leaf readily falls away, leaving the branches scaly with the persistent stipules. Flowers numerous (and of a white colour, *Auth.*), in fascicles from the branches where the leaves have fallen away, bracteated. Peduncles about as long as the flower, sharply angled. Calyx five-cleft, segments acute. Petals alternate with the calycine segments, oblong, concave, wavy, with a lacerated and much-plaited membrane arising from within and above the base. Stamens, ten, filaments longer than the pistil, combined below into a rather short cylindrical

*Name derived from *ERYTHROS. red*, and *XYLON, wood*, referring to the wood of the shrub.

tube. Ovary oval. Styles, three, about as long as the ovary. Stigmas thickened. Fruit a one-seeded oblong drupe, in a dry state obscurely furrowed," containing a seed or "nut the same shape and furrowed"—*Lindley*. Great care is exercised by the native cultivators of this shrub. The seeds are sown in well prepared soil, which is divided into various departments. In the course of a few weeks the seeds sprout. When they have grown to a height of one or two feet they are transplanted to other grounds, at distances of two or three feet from each other. These plantations are designated *cocales*, and are formed in the most shady places so as to afford the plants some protection from the direct heat rays of the sun. Frequently however the position of these *cocales* in certain of the valleys renders necessary more protection than that afforded by forests, in such cases the natives sow Indian corn between them, the broad shady leaf of which serves as additional protection to the coca plants. The leaves are the part used.

The average period required to bring the coca shrub to perfection is about two years. The precise time is determined by the height of the branches and bitterness of its leaves, and by the comparative ease with which the leaves break or fall on touching them. The shrubs bear stripping of their leaves two or three times in the course of a year. They are gathered by the native Indians, who exercise a great amount of care, not only so as to preserve them in their entirety, but also to prevent breakage or injury to the axillary buds, which would necessarily diminish the future crops of leaves on the same branches. The leaves, when gathered, are immediately laid upon the ground for the purpose of being dried by the sun, which is thoroughly accomplished without any curling whatever, the leaves retaining their flat appearance. They are then usually wrapped

in palm-leaves and covered with flannel, and are fit for use. To preserve the leaves, they are kept from damp and moisture. When dry and fresh they possess a strong, pleasant, tea-like, odour. Peruvians state that their properties soon deteriorate, and that in a few months they lose their virtues. But with proper care they may be kept for a lengthened period without much deterioration. If, however, in their transit to this country they come in contact with damp or moist air, deterioration will speedily ensue. I have seen scores of different samples of them, but very few of the leaves purchased can be called good ones, in fact, some samples have been utterly worthless. A friend of mine bought, for purposes of experiment, a few coca-leaves from a respectable firm of wholesale chemists, which upon slight examination were found to be of a very deteriorated character; to the underside of the leaves were attached a number of reddish excrescences, which upon further examination with the microscope, were found to consist of small insects.

CHEMISTRY- Coca leaves, by proximate chemical analysis, are found to contain a crystallizable substance, called *cocaine*, a volatile alkaloid, *hygrine*, a peculiar tannin *coca-tannic* acid, bitter extractive, chlorophyl, a waxy body termed *coca-wax*, and salts of lime.

Cocaine. The formula of this alkaloid is represented as $C_{16}H_{19}NO$. It is an alkaline base which crystallizes in small colourless inodorous prisms having a slightly bitter taste. It is very soluble in ether, but only sparingly so in distilled water. When exposed to temperatures higher than 170° Fahr., it yields ammoniacal products. Lossen, a German chemist, found that cocaine, when heated with hydrochloric acid is decomposed into a new base, *ecognine*, and benzoic acid.

Hygrine, at ordinary temperatures, assumes the form of a thick yellow coloured oil. It is strongly alkaline, and possesses a burning taste. It is readily soluble in alcohol and ether. The active properties of these leaves depend upon the two principles—Cocaine and hygrine.

PHARMACY; We have used erythroxylon coca in the following forms. The simplest form in which these leaves may be administered is the

Infusion of Coca: Take of Coca leaves, bruised, one ounce; boiling water ten fluid ounces. Infuse in a covered vessel for one hour, press slightly, strain; there will be obtained a fluid measuring about eight ounces, having an appearance and odour like unto an infusion of ordinary green tea. Slightly alkaline and bitter in taste. Dose, from half to one and a half fluid ounces, each fluid ounce representing one dram of leaves.

Aqueous Extract of Coca: Coca leaves, bruised, or, what is better, in coarse powder, eight ounces, water a sufficiency. Macerate the coca in two pints of water, at a temperature of 120° Fahr., for a period of two hours. Pack in a conical percolator, and exhaust with water at a temperature of 100°. Evaporate by water bath, at a temperature not exceeding 140° Fahr., to the required consistence. This extract is brownish in colour, and bitter in taste. Dose, ten to twenty-five grains.

Alcoholic Extract of Coca: Coca in moderately coarse powder; alcohol, 56 over proof, a sufficiency. Moisten the powder with alcohol; pack in a conical percolator. Add more alcohol and continue the percolation until the powder is exhausted. Evaporate the resulting percolate, by means of a water bath at a temperature not exceeding 140° Fahr., until of a proper consistence for forming pills.

This is much superior to the aqueous extract, possessing the characteristic taste and odour of coca-leaves in a high degree. It is of a green colour, resinous or waxy in character, due to the presence of coca-wax. Dose, five to fifteen grains in the form of pills.

Fluid Extract of Coca:—Coca in coarse powder, eight ounces, proof spirit, a sufficiency. Moisten the leaves with proof spirit, pack tightly in a percolator, pour on proof spirit, until six ounces of percolate has been obtained which set aside; then exhaust the leaves with more proof spirit, evaporate, at a temperature of 140° Fahr., to a bulk of two ounces, which add to the first percolate. *Dose*, forty-five to ninety minims.

Glycerine Extract of Coca:—Take Coca leaves, in coarse powder, five ounces; on which pour two ounces of hot water, then add fifteen ounces (by weight) of glycerine. Macerate, in a warm place, for a period of thirty days. At the end of that time press out the fluid portion, using a screw press, strain the resulting fluid product and set aside. Remove the residue from the press, and pour on it about twenty-four ounces of water at a temperature of 150° Fahr., at which temperature let it be kept for a period of two hours; strain, evaporate to such a product that the quantity when added to the glycerine fluid shall measure fifteen fluid ounces. This is a very pleasant and efficient preparation of erythroxyton coca and is generally admissible in all cases. *Dose*, one to three drams.

Tincture of Coca:—Coca leaves, bruised or in coarse powder, four ounces; proof spirit, one pint. Moisten the leaves, pack in a percolator, and percolate twenty ounces. *Dose*, four, to six or eight drams. This form is very objectionable, as the amount of alcohol administered in a dose of the tincture will altogether alter the natural effects of the coca-leaf.

PROPERTIES AND USES.—The leaves of *Erythroxylon Coca* are chewed by the South American Indians, and have been used by them “from time immemorial,” as it were. Their properties have been variously historically recorded by Peruvian travellers. Among the historians who have travelled through Peru, &c., and have recorded their experience of its properties and uses are to be found gentlemen, British and Foreign, whose accounts are highly interesting. One of the earlier, though not the earliest, historians who give us information respecting this plant, is Garcilasso de la Vega. In his “Royal Commentaries of the Yncas” (Translated by Clements R. Markham, C.B., London, 1871) we find a long narration of his personal experience, and also that of a Spanish priest, Blas Valera. We are told that the use of *erythroxylon Coca* dates from no recent period, and that in the earlier period of its use it was monopolised by the monarchs; and further that it was offered as an offering to their deity, the sun. But as the YNCA monarchs, extended their dominions so as to acquire suitable lands for cultivation of the plants, the leaves became more generally used; and at the time of the Spanish conquest of Peru, the natives used it pretty nearly universally. The Spaniards, being devoted Roman Catholics, were strongly prejudiced against the practice of coca-chewing which continued to savour of heathen rites. Garcilasso de la Vega and Blas Valera strongly protested against the Spanish prejudices; and from them we learn that the natives of Peru esteemed *Erythroxylon Coca* above the value of gold and silver, preserving strength during fatiguing exercise and privation of food; that it was useful for improving the teeth, mending broken bones (doubtless by increasing the *vis medicatrix naturæ*), curing maggoty sores, and warding off the effects of cold.

Garcilasso de la Vega also gives us the following anecdote, which illustrates both the Spanish dislike and the real virtues of coca-leaf:—"A Spanish friend of his, met one of his countrymen, a poor soldier, plodding his solitary way among the Andes, chewing coca-leaf, and carrying his two year old child in his arms; on upbraiding the man for adopting a barbarian custom, abhorred by all true believers as the fruit and symbol of idolatrous worship; the soldier said that might be; he at one time shared in the same prejudices, but had found he could not carry his child without the strength which the coca-leaf imparted, and was too poor to afford the cost of a bearer to relieve him of his burden." And nowhere does this author say one word of evil consequences resulting from the habitual use of this vegetable. The German naturalist Poppig, in his "Travels in Chili, Peru, and on the river Amazons" does not give such a glaring account of erythroxyllon coca. It is unnecessary to follow through his arguments here, because we shall refer to them shortly; but we may here say that Poppig acknowledges its wonderful power in supporting the strength under long fatigue without food. He mentions that, in his long rides through the Peruvian forests, he had seen his Indian followers accompany him on foot for fifty miles in one day, without food, or anything else except coca-leaf; and that in the revolutionary wars which ending with the Spanish American states throwing off subjection to Old Spain, the native Peruvian troops, poorly clothed and ill fed, were able to fall upon their enemies by surprise, by taking long marches among the mountains without food or sleep, merely resting for intervals of a few minutes occasionally to refresh themselves by coca-chewing.

Dr. T. I. Von Tschudi, who travelled in Peru, etc., during the years 1838-42, visited several districts where the

natives almost universally use coca-leaves. He also records in his "*Travels*" (translated by T. Ross, London, 1847) that he repeatedly tried it, and he then gives his personal experience of its use. He found it to be a *preventative* of that *difficulty in breathing* which is felt in the rapid ascent of the Andes; and that, when frequenting the Peruvian Puna, or "Great Desert table-land," 14,000 feet above the level of the sea, the coca-leaf enabled him to climb heights, and pursue swift footed animals, with no greater difficulty than in similar rapid exercise on the coast; and that he experienced a sense of satiety which did not leave him till the time of the next meal after that which he ought otherwise have taken. He mentions the following instance, which he carefully watched, of the power of the Indians to bear long fatigue without any other sustenance. A miner 62 years old, worked for him at laborious digging five days and nights without food, or more than two hours sleep nightly, his only support being half an ounce of the coca leaves every three hours. The man then accompanied him on foot during a ride of 60 miles in two days, and, at parting, expressed himself ready to engage to undertake as much as he had performed. Nevertheless Von Tschudi was informed by the priest of the district that he had never known the man to be ill.—The doctor concludes by declaring that he is "clearly of opinion that the moderate use of coca is not only innocuous, but may even be conducive to health;" and that "after long and attentive observation, I am convinced that its use in moderation is nowise detrimental, and that without it the poorly fed Peruvian Indian would be incapable of going through his usual labour. The coca plant must be considered a great blessing to Peru," yes, even as a dietetic. *Clements R. Markham* in his "*Travels in Peru and India*"

bears out fully the statements of Garcilasso de la Vega, Blas Valera, and Von Tschudi. This gentleman had charge of Government expeditions to Peruvian territories in order to procure cinchona plants for transportation to India, and while there, in forest districts around Bolivia, had ample opportunities of obtaining information respecting the influence of erythroxyton coca upon the native Indians and likewise upon himself. He says the properties of erythroxyton coca are such as to enable a greater amount of fatigue to be borne with less nourishment (in the form of ordinary food) and to prevent difficult breathing in the ascent of steep mountain-sides; that, although when used to excess it is prejudicial to health, yet "of all the narcotics used by man, it is the least injurious and most soothing and invigorating." He frequently chewed it, and, besides imparting an agreeable soothing feeling, found he could endure long abstinence from food with less inconvenience than he otherwise would have felt; and further, that he was enabled by it to ascend precipitous mountain-sides with feelings of lightness and elasticity, and without shortness of breath. "It enabled him to ascend the mighty passes of the Andes with ease and comfort."

It is a stomachic, soothing, nutritive. *Bentley* says "The Peruvian Indians have always ascribed to the coca the most extraordinary virtues. Thus they believe that it lessens the desire and the necessity for ordinary food; and, in fact, that it may be considered as almost a substitute for food."

Dr. Bennet of Ediuburgh, in the British Medical Journal, publishes an elaborate investigation of the properties of the Coca leaf; his conclusions are that coca has a marked effect in diminishing the waste of the tissues, conferring thereby the power of sustaining prolonged exertion, also that

it possesses the power of regulating the temperature of the body.

Prescot treats coca as an article possessing so invigorating a quality that with a small quantity of it in his pouch and a handful of roasted maize, the Peruvian Indian of our time performs his wearisome journeys day after day without fatigue. The Indian miners are furnished by their employers with little food but as much coca leaves as they want, some Indians consuming as much as a pound a week of it, and they work twenty to thirty hours at a stretch without sleep.

Mr. Wittingham gave an account of two men who had been buried in a mine for eleven days before they could be got out, and they lived all that time on a few coca leaves they happened to have with them.—*Dr. Thompson's Cyclopædia of Chemistry.*

The leaves of this shrub created deep interest and obtained great notoriety in this country during some walking feats performed by *Mr. Weston*, an American pedestrian, at the Agricultural Hall, London; it became known that during his exertions he was in the habit of chewing coca leaves. During these walks and since their completion, there appeared in the public journals and papers many articles and letters soliciting information on the properties of these leaves. This induced me to give a little of my experience in the use of erythroxyton coca by the following letter which appeared in the *Standard* of March 21st, 1876.

THE COCA LEAF.

TO THE EDITOR OF THE STANDARD.

SIR,—It was with great pleasure that I read an article in the *Standard* of March 10th upon the remarkable properties of Erythroxyton coca. I am pleased to know that

scientific investigators are examining these properties. There is no doubt the public will be grateful for any information that can be given respecting the efficacy of coca in prolonged exertion and in the curing of disease. I have used coca in my practice (in this country) for nearly five years. I think it is an admitted fact that the South American Indians are the most active race of people in the world. This activity is attributed to the natives making frequent use of the leaves of the coca shrub, which grows to the height of about eight feet. Its leaves are from one inch to one inch and a half long, and are of a dark green colour; flowers white; berries red. It is carefully cultivated, and arrives at perfection in about two years, when the native Indians gather the leaves and very carefully dry them and wrap them in palm leaves and flannel.

The physiological effects of the coca leaves upon the system are evidenced by its producing a high grade of vitality (physical and mental); eyes and countenance very brisk and animated; strong pulse; a great desire for activity; the body is extremely vigorous. I have seen no authenticated account of the coca eater dying in a wretched state; but, on the contrary, evidence goes to show that the coca eater lives to an advanced age. Two or three cases of cure from my note-book may be of interest to your readers. Case 1. In 1873 I was called to see a gentleman, well built, aged 40 years, who, when in health weighed nearly 15 stones; but at the time I was consulted he weighed eleven stones. He was suffering from all the characteristic symptoms of consumption. His former medical attendant used the ordinary remedies without avail. Debility was so great that it was with difficulty he could walk across his room. We commenced treatment by giving him coca,

which speedily relieved him, and wrought a cure in about nine weeks. Case 2. In the same year a gentleman, aged 46 years, who had suffered for twelve years from amaurosis and paralysis of the lower extremities. In this case a mixture was given with coca, as the active ingredient, with the result that within fifteen weeks his vision was perfectly restored and he was able to walk a distance of several miles without difficulty or fatigue. Case 3. In 1875, a lady aged 78 years was suffering from extreme debility with sickness, faintness, loss of memory, and fretfulness; her friends expected every hour her decease, but, to the surprise and wonder of her friends, after a month's treatment with coca she was restored to her usual health and activity.

I have, with success, treated hundreds of cases of debility and consumption, of which the above are examples. In some cases I have used "cocaine," the active principle of erythroxylon coca.

I can fully endorse the statements of the scientific gentlemen quoted in your article in respect to the efficacy of coca in prolonged exertion.

I am yours, &c.,

WILLIAM TIBBLES, M.D. (U.S.)

Syston, Leicester, March 20th, 1876.

"It appears that no reasonable doubt can be entertained as to the chewing of the coca leaf by Weston during his remarkable walk, and the properties ascribed to that plant are also undoubtedly excellent * * * * * Coca leaves after having been dried, form part of the "personal property," so to speak, of most of the South American Indians. Wherever they go they carry with them a small bag of these leaves, which they chew three or four times a day. Mr. R. Spence, the South American traveller, tells

us that an Indian with a chew of coca in his cheek will go for two or three days without food or sleep, and several other travellers have borne ample testimony to the truth of what at first seems to partake of the nature of a fable.”
From the Country.

“Mr. Weston * * * has the eyes of the country upon him. To one enquiring pair we owe the discovery that at intervals, as the American pedestrian pursues his route, he may be seen to go through the action of chewing, and that a brown stain may be observed upon his lips. It is the fate of public men to have to afford amiable replies to the most impertinent of questions, and Mr. Weston, it appears was asked by the possessor of the observant pair of eyes what he was chewing, the reply, ‘Erythroxyton Coca’ made by Mr. Weston, might to any but a scientific gentleman, have sounded rather ominous; but the gentleman who made the enquiry knew at once that ‘Erythroxyton Coca’ or at least, the dried leaf of that plant, though little used in this country, had the reputation of possessing extraordinary powers of sustaining the body under severe fatigue. Thus a new leaf must be added to those numerous treatises on the art of walking * * * The coca leaf cannot be strictly regarded as a stimulant, but, rather as a preventative of waste, such as is entailed by undue activity of the system.”—*Nottingham Daily Guardian*, March 13th, 1876.

Professor Bouchardat, a French *savant*, considers erythroxyton coca a stimulant to the nervous and muscular systems. He terms it a “*substance d’épergné*,” or that which prevents the rapid waste of tissue substance, and without reactionary effect upon the system.

“I have personally used it,” says a correspondent in the *Lancet*, July 6th, 1872, “for twenty-five or thirty years,

and have found it exceedingly useful as a stimulant or reviver. It is very good also when added in small quantities to ordinary tea. A *digestive* and truly pick-me-up liquor is made of it, and would be a boon to many if they knew the advantage which might be derived from its use. It seems to act, also, as a slight antiseptic, besides possessing many other qualities."

Sir R. Christison, Bart., M.D., D.C.L., F.R.S., in a paper read before the Botanical Society of Edinburgh, on April 13th, 1876, gives the results of some very interesting and elaborate experiments conducted by himself. The following extracts are from the *British Medical Journal*.

"I had first to ascertain what amount of exercise was required to cause very thorough and permanent fatigue. At the same time, I made such observations on certain of the functions as seemed desirable and easily practicable. In the beginning of May, under a day temperature of 58 deg., I walked fifteen miles in four stages, with intervals of half-an-hour, at four-mile pace, without food or drink, after breakfast at half-past eight, and ending with a stage of six miles at half-past five in the afternoon. I had great difficulty in maintaining my pace through weariness towards the close, and was as effectually tired out as I remember ever to have been in my life, even after thirty miles at a stretch forty or fifty years before. Perspiration was profuse during every stage, particularly the last of all. I took the urine-solids every two hours, and found a decided increase of the hourly solids during the forenoon's exercise, and a decrease during the evening's rest after dinner. The pulse, naturally 62 at rest, was 110 on my arrival at home; and two hours later it was still 90. I was unfit for mental work in the evening, but slept soundly all night, and awoke next morning somewhat wearied and

disinclined for active exercise, although otherwise quite well. Two days afterwards I repeated this experiment, and obtained precisely the same results, except that the urine-solids were not so abundant during exercise as before, although my food had been precisely the same.

“ Four days later, with precisely the same dietary, I walked sixteen miles in three stages of four, six, and six miles, with one interval of half-an-hour, and a second of an hour-and-a-half. During the last forty-five minutes of the second rest I chewed thoroughly eighty grains of my best specimen of coca, reserving forty grains more for use during the last stage. To make assurance double sure, I swallowed the exhausted fibre, which was my only difficulty. On completing the previous ten miles, I was fagged enough to look forward to the remaining six miles with considerable reluctance. I did not observe any sensible effect from the coca till I got out of doors, and put on my usual pace; when at once I was surprised to find that all sense of weariness had entirely fled, and that I could proceed not only with ease but even with elasticity. I got over the six miles in an hour-and-a-half without difficulty, found it easy when done to get up a four-and-a-half mile pace, and to ascend quickly two steps at a time to my dressing-room, two floors upstairs; in short, had no sense of fatigue or other uneasiness whatsoever. During the last stage, I perspired as profusely as during the two previous walks. On arrival at home, the pulse was 90, and in two hours had fallen to 72; the excitement of the circulation being thus much less, and its subsidence more rapid, than after the same amount of exercise without coca. On arriving at home before dinner, I felt neither hunger nor thirst after complete abstinence from food and drink of every kind for nine hours; but on dinner appearing,

in half-a-hour, ample justice was done to it. Throughout the evening I was alert and free from all drowsiness. Two hours of restlessness on going to bed I ascribed to the dose of two drachms being rather large; and after that I slept soundly, and awoke in the morning quite refreshed, and free from all sense of fatigue, and from all other uneasiness. Another effect, not unworthy of notice, was that a tenderness of the eyes, which for some years has rendered continuous reading a somewhat painful effort, was very much mitigated during all the evening."

The following are the results of an experiment relative to the effects of coca leaves conducted by Dr. Walter Bernard, and communicated to the *British Medical Journal*, June 17th, 1876. He says, —

"I selected for the experiment a day with the maximum of fatigue in it. This was Monday, May 22nd, 1876. I was constantly on foot from 8-45 A.M. to 10 P.M., with the exception of an hour for dinner (from five to six o'clock); and my dinner consisted of roast lamb, some vegetables, no stimulants, and was followed by tea at seven o'clock, and mechanical rest, but no sleep up to the hour (12-15 A.M.) when I commenced to prepare for my trial trip. Thus, without food or drink since seven o'clock, I set out at 1 A.M., accompanied by Professor Leebody, analyst for this city, for a twenty-four miles' walk, and the ascent at the end of it of a hill 1,381 feet high. Commencing my journey, I certainly did not feel inclined for much exertion; but after some miles brisk walking, I felt more equal to the work. We did $13\frac{1}{2}$ miles in three hours, giving an average of $4\frac{1}{2}$ per hour. We could have done $4\frac{3}{4}$ easily, as a smooth level footway extended to this point, but rain fell heavily for the first two hours and a half, rendering the footpath

slippery, and thus interfering with a quicker pace. Up to this time, we did not feel fatigued. Here we commenced at the end of three hours, to chew forty grains of the coca. We traversed a very bad billy road, strewn with loose stones, which considerably impeded our progress. Walking under these difficulties, and now fatigued, we found no material benefit from chewing and swallowing the active principle of the leaves; a doubt, however, remained in my mind as to this conclusion, as I fancied my step, on ascending the little hills, was more elastic, and the feeling of fatigue slightly mitigated. This idea soon ripened into a belief. At six o'clock, and not far from our destination, each of us had a second dose of forty grains. I now resolved to finish well up by giving it a fair trial. Testing my strength to the utmost, and chewing quickly, I advanced towards the hill with a rapid pace, leaving Mr. Leebody in the rear. Arriving at Mamore gap, I made a very rapid ascent of Mamore hill, 1,381 feet high. Hurried breathing and fatigue began to be felt when I was about half-way up. Here I commenced to chew another forty grains; and, before I arrived at the top, though I still continued my rapid pace, power was restored. My breathing was considerably relieved. I felt in excellent spirits, and neither hungry nor thirsty. It was seven o'clock when I arrived at the top, somewhat later than we expected; but the loss of time was mainly due to the zig-zag course I followed in endeavouring to avoid the loose stones. Yet, were it not that along the rough road we were cheered by a beautiful clear morning (for all clouds and threatening of rain had vanished) and an invigorating balmy breeze from off the sea, our arrival would have been somewhat later. I remained 10 minutes on the top, admiring the coast line, the entrance to Lough Swilly, the cultivated lands lying low and quite flat

at the east of the hill between me and the sea, as well as the grandeur of the Donegal mountains free from haze. I felt now quite refreshed and buoyant, with no sensation of hunger, thirst, or fatigue. On descending, I bounded like a doe, jumping from knoll to knoll. Some short distance down, I met my companion, making for the top. I asked him had the *cuca* any effect on him? He said not. I offered him another forty grains, but he would not accept it, being somewhat disheartened. He was however, still chewing what he had remaining of the second forty grains. I left him, and made my way to a house where my servant had put up my horse and vehicle, which followed us during our course. On arriving here, I was cool and comfortable; for soon after I had put on the rapid pace I had become bathed in perspiration from the lumber region upwards. Gently retracing my steps from the foot of the hill afforded me time to become cool.

“On leaving home, my pulse was 60; temperature 98 deg. Now the pulse was 94; temperature 96 deg. I waited a quarter of an hour for Mr Leebody, and was agreeably surprised to find him beginning to change his views as to the efficacy of the leaf. He had now lost almost all feeling of lassitude. We had determined to walk home, to give the *Cuca* a fuller and fairer trial; but both being now agreed in thinking that there was good service rendered to us by its use, and that a further prosecution of the experiment would not add much more accurate knowledge to that which we had now gained, we decided to drive—first walking briskly a long high hill—and we arrived at home at 10-30. The greater part of the way home I had a strong taste of the shrub in my mouth, resembling somewhat that of tea. On my arrival, I did ample justice to a good breakfast. I worked unceasingly

and willingly all the day, and did not feel at all fatigued, and did my work on foot. I had no desire to sleep. Those who knew that I had been walking for so many hours during the night and morning, mentioned that I neither looked jaded nor worn, and I certainly did not feel so. Moreover, I state positively (and this can be substantiated by my wife) that when I have had occasion to sit up watching, I have been fagged and tired the next day, having browache not unfrequently from exhaustion. I felt thirsty at two o'clock, and had a bottle of Apollinaris water. I dined at five on mutton, pancakes, and four glasses of good Burgundy. At six o'clock I retired to my room to write out my notes, but felt disinclined for work for the first time during the day. This disinclination was excited by the Burgundy, as alcohol, in any shape or form, has always had this effect upon me. At seven o'clock, I took eight ounces of tea, which so refreshed me that I was able to complete my notes, and finished them at nine o'clock. I took them across the street to compare them with those of Mr Leebody. I retired to bed at a few minutes after ten o'clock; fell at once into a sound sleep, and awoke refreshed at a quarter to six o'clock. I then had a bath and was dressed at seven, and I feel all right to-day (Wednesday, May 24th).

“ In May, 1873, I walked twenty-seven Irish miles with Mr Stewart, manager of the Bank of Ireland in Carlow, and Mr Craig, manager in this city, taking twelve hours to accomplish the journey, and dining and resting; drinking one bottle of porter and a glass of whisky, with a view to assist my progress; and, on another occasion, I did eighteen miles, and took the same amount of stimulants. Long before reaching home, I felt extremely fatigued, and on both occasions did not sleep the first two or three hours,

owing to palpitation and restlessness. Since then, I have found, by experiments on myself, that although a stimulant restores power for the first few miles, it has a strong tendency to induce depression of spirits, lassitude, and disinclination for mental or bodily work. Further, it helps to make me restless in the beginning of the night, waking with a dry tongue in the morning." But on retiring to rest after the walk with *cuca* or *coca*, says this gentleman, "I had not my usual accompaniments of fatigue on lying down, *i. e.*, palpitation, and a dull aching pain in the left eyebrow. This will lead me to try the effects of *cuca* as a cardiac tonic."

PHYSIOLOGICAL ACTION AND MEDICINAL USES.—The physiological action of Erythroxyton Coca has been variously stated. Many individuals maintain that its action is that of a narcotic like Opium, and Tobacco, that persons under its influence are capable of performing extraordinary amounts of physical labour simply because their nervous sensibility is deadened by the use of *coca*-leaf, and they are enabled thus to use themselves up, and that their work is performed with the same amount of loss of nervous and muscular tissues and with subsequent reaction or depression. Others hold and teach that the action and effects of Erythroxyton Coca are similar to the action and effects of alcohol. As these respective opinions have been and are now held by many individuals and upon which objections to its use are generally based, I shall state the points which, through a long continued observance of the action of this drug upon myself and others, have become thoroughly impressed upon my mind in reference to this subject, and which, if they are substantiated by evidence, and I believe they are, will thoroughly combat the above stated notions. The points

are three in number, namely, that coca leaf when taken, *first*, during prolonged mental or physical exertion is capable of materially reducing the waste of tissue and consequently maintaining equilibrium longer than would otherwise be maintained; *second*, that when administered during conditions of exhaustion, caused by mental or physical labour, or by disease, it is capable of restoring the body to a normal or equipoise state quicker than by ordinary food or medicine alone; and, *third*, that its use is unattended with injurious results, such as follow the use of Opium, Tobacco, or Alcohol.

First.—*Coca-leaf when taken during prolonged mental or physical exertion, is capable of materially reducing the waste of tissue, and consequently maintaining equilibrium longer than would otherwise be maintained.* For a short space let us enquire into the effects produced in the body by work, physical or mental, including voluntary muscular action, voluntary action of the brain, and the involuntary action of the internal organs—heart, lungs, &c. All work necessarily implies a transformation or transmutation of energy. In other words, work of the brain or the muscles implies waste, or transformation of the force or energy pent up or conserved in the body, and consequently implies consumption of the substance composing the body. And unless this waste is constantly replaced and the force as constantly transmuted from the food we eat, labour or work would be impossible to us, that, finally, we should die. But to supply this continuous drain upon our bodily resources we take into our bodies a certain amount of vegetable and animal food to supply what has become deficient. The average force-value of the food consumed daily by a working man is equal to about 5,000 foot-tons. The average daily work of a labourer is equal to 350 foot-tons.

But, frequently with our ordinary work a much greater amount of the body's energy and tissue is consumed than is actually necessary to accomplish a certain amount of work. Thus, a man, at one time, will perform an amount of work with a much less sum total of expenditure of the bodily forces than at another time. A man will be more easily fatigued at one time by a given amount of work than at another time. This is obvious from the fact that the man possesses, within his body, a greater amount of governing force than at another time; or, his powers may become exhausted, not from the amount of force he exerts in accomplishing his labour, but, because of the unequal or non equipoise in the action of the various internal organs. For instance, a man may be doing a piece of work which requires a certain definite amount of force to accomplish it and the force expended in maintaining the action of the internal organs, we will say, for the sake of illustration, is equal to a ; at another time the same man shall do a piece of work requiring the same definite amount of force, but the force expended, during that period, in the maintenance of the action of the internal organs may be very much increased, and even become equal to $1\frac{1}{2}a$. The heart under some conditions does an amount of work over and above its natural work, equal to 15, 20, or even 24 tons weight lifted one foot high, in 24 hours. In such cases the body becomes unnaturally weakened.

What we have to establish here, is that coca-leaf prevents a too rapid waste of nervous force and tissue substance. This is evidenced in three ways: 1, in the diminution in the production and excretion of urea, among other waste products; 2, in the maintenance of an equilibrium in the action of the heart and circulation; and 3, in the regulation

of the respiratory movements and internal temperature of the body.

1.—As all work implies waste, those waste products, the result of decomposition of the tissues into new compounds, which are of themselves injurious to the body, are eliminated or excreted through various portals, from the body. It is found that, when the body is in a healthy condition, the product of the excretions other than the alvine—bears a direct relation to the amount of force exerted in the body, and as the whole of the nitrogen of disintegrated tissue is excreted per kidneys, in the form of various chemical compounds, the most important, and the one which is always produced in the greatest proportion is Urea, it is obvious that if we determine the amount of this urea excreted in a given time we may calculate the amount of the body's force expended in a given time. Now it is found by experiment that the action of coca-leaf tends to lessen the waste of tissue substance, to diminish the amount of solids excreted in the urine—diminishes the amount of urea produced (this is a nitrogenous compound and is a constant production of the decomposition continually going on in the body, and the amount of it proportionate to the waste). M. Bouchardat, a professor in a noted French University, terms it a “substance de épergne” or that which prevents waste of tissue substance. Sir Robert Christison, Bart, performed a series of experimental walks, a description of which has been given, and regularly during these walks he determined the amount of solids (waste products) eliminated from his body, per kidneys. The following is a table by that gentleman of the respective amounts, determined from urine voided under three conditions; namely, first nearly at rest; second, under hard exercise *without* coca-leaf; and third, hard exercise *with* coca-leaf or coca :

	Hourly Solids of the Urine under		
	Rest	Exercise.	Exercise with coca.
8½ A.M. to 10½ A.M....	27.1 grains	40.1 grs. 3 miles	32.6 grs. 4 miles
10½ A.M. to 12½ P.M....	31.7 "	40.0 " 3 "	32.5 " 6 miles
12½ P.M. to 2½ P.M....	32.9 "	40.7 " 3 "	32.0 " { rest & coca
2½ P.M. to 4½ P.M....	30.8 "	28.6 " 6 "	32.0 " { 6 m & coca
4½ P.M. to 11 P.M....	29.0 "	32.9 " rest	33.5 " rest
11 P.M. to 4 A.M....	30.7 "	36.0 " sleep	39.5 " slp disturbd
4 A.M. to 8 A.M....	33.3 "	32.0 " sleep	27.1 " sound sleep

Thus the total amounts eliminated during equal periods of time and under the three varying conditions: namely, at rest, 215.5 grains; exercise, 250.3 grains; exercise under influence of coca-leaf, 197.2 grains. This shows a great diminution in the production and excretion of solid waste products.

2.—Coca regulates and greatly assists in maintaining that equilibrium of action of the heart and capillary circulation, which is so necessary to the maintenance of an unexhausted state of the body. The muscles brought into action during the performance of manual labour are frequently eager for a greatly increased supply of arterial blood. To supply this increased want of blood necessarily entails an increase of vaso-motor action; thus in persons who have to make a little extra muscular exertion, the capillary vessels will necessarily dilate excessively, and if the action of the heart does not correspondingly increase in frequency and force, the tension of the vessels will fall, and if, in such a case, the pulse be felt, the artery conveys the sensation of a double or rebounding pulse. If, on the other hand, the heart be working excitedly, as when an individual receives some exciting impressions during the time he is performing simple labour which does not require a great increase in the supply of blood to the muscles; or, in other words, while the muscles do not require a supply of blood much greater than on ordinary occasions, the

tension of the arteries, or the force of the blood contained in them, may be greatly raised, and the amount of heart-work further increased in order to force the circulation of the blood at the increased speed. Mental labour is frequently productive of such arterial tension—an exhausted Brain, whereby its influence over the heart's action is diminished, will give rise to it; the diminution of nervous influence over the excretory organs whereby an increased amount of urea is produced and collected in the blood will give rise to it; as will also abnormal nutrition during exertion. These variations are abnormal and give rise to ill effects. In extremely low tension of the arterial and capillary vessels, the increased supply of blood to the muscles causes anemia of (being a deficiency of supply of blood to) the brain, and there is produced a feeling of fatigue, giddiness, or fainting. In this condition there is abnormal rise in the internal temperature. On the other hand, if the arterial tension be increased, then the strain will fall upon the heart, which will become overtaxed, dilated, and in some cases entire failure will be produced, either by overdistention and paralysis, or, by gradually increasing signs of dilatation, producing breathlessness, a sensation of lightness in the head, coldness of the extremities, pallour of face, anxious expression, and the temperature is abnormally decreased. These are the results of discordant action of the circulatory system, produced by exertion or excitement. It may be asked, what has all this to do with the action of coca-leaf? Well, it is found by experiment that coca-leaf regulates the action of the heart and circulatory system and thereby nearly altogether preventing such results as above recorded as the consequence of muscular exertion or mental excitement. I, myself, have made experimental walks and performed other forms of exertion,

physical and mental, and during which I have observed various functional differences, and of these observed experiments many might be quoted, but let my own observations be exemplified by the following: My pulse, normally are 70 per minute, and at the end of a sharp walk of two hours' duration, had risen to 92 pulsations per minute, and did not subside until after a period of six hours had elapsed. A walk performed under like conditions of distance, speed, and with like dietary as before, but during which twenty-five drops of a concentrated preparation, representing twenty-five grains of coca-leaf, was twice taken; the first dose before starting and the second at the end of the first hour. At the end of this walk the pulse beat eighty-four per minute, and, in less than two and a half hours, subsided to a normal condition.

Sir R. Christison testifies to this very explicitly: After a walk of fifteen miles, he says, "The pulse naturally 62 at rest, was 110 on my arrival at home; and two hours later it was still 90. I was unfit for mental work in the evening." After a walk of sixteen miles during which Sir R. Christison used coca-leaf, he "Had no sense of fatigue or uneasiness whatsoever. . . . On arrival at home, the pulse was 90, and in two hours had fallen to 72; *the excitement of the circulation being thus much less, and its subsidence more rapid, than after the same amount of exercise without coca.*"

3.—Coca-leaf influences the system whereby the respiratory movements and internal temperature of the body are regulated. During any severe exertion the respiratory movements are considerably increased in frequency. Thus in walking up a hill the breathing is quickened and great difficulty is frequently experienced in the performance of that function. But it has been found that coca-leaf enables

a person to perform various forms of exercise without that abnormal symptom which usually denotes a certain condition of exhaustion. Von Tschudi observes that coca-leaf is found to be a preventative of the difficulty in breathing experienced during the rapid ascent of the of the Andes. Clements R. Markham, says "It enabled him to ascend the mighty passes of the Andes with ease and comfort." And more recently, Dr. Walter Bernard during the ascent of Mamore hill, 1381 feet high, in Ireland, after a long walk, observed that, "Hurried breathing and fatigue began to be felt when about half way up." He then took a few grains more of the coca-leaf, "and," he says, "before I arrived at the top though I still continued my rapid pace, . . . my breathing was considerably relieved."

Where by slight exertion of the muscles the tension of the arteries becomes low, we have an increase in the internal temperature. Where the reverse occurs—where there is strain upon the heart, then the temperature of the body is abnormally decreased. If a dose of the coca-leaf be taken before or during physical or mental exertion, the temperature will be kept in a more equipoise state, and will subside to its natural condition much quicker than without coca-leaf. Usually the temperature of my body is 97.5° Fahr., but after a walk of two hours duration is raised to 99.5°. However after a walk of a like distance and occupying the same time, during which I have taken coca-leaf, the temperature at the end of that journey was 98.5° and when at rest, its subsidence to normal was very quick. On the other hand, I have administered preparations of coca-leaf to persons whose temperature has registered over 100° Fahr., and by its use brought the temperature down to a more normal degree, and the patient's condition marvellously improved. And we have it on the authority of Dr. Bennet,

of Edinburgh, "that it (coca-leaf) possesses the power of regulating the temperature of the body." Thus Erythroxylon Coca may be regarded as a preventative of exhaustion, as evidenced by the absence or diminution of the usual symptoms attendant upon exhaustion. This is also shown in the reports of coca-leaf given by various Peruvian travellers: Mr. Whittingham gives an account in Dr. Thompson's Cyclopaedia of Chemistry, of two men who had been buried in a mine for eleven days and when they were got out it was found that they had subsisted during that long period on a few coca leaves they happened to have with them.

This brings us to point the

Second. When administered during conditions of exhaustion, caused by mental or physical labour or disease, Coca-leaf is capable of restoring the body to a normal or equipoise state quicker than by ordinary food or medicine alone. Seeing that the action of erythroxylon coca is such as to greatly diminish the disintegration of tissue, as evidenced by diminished production and excretion of urea, and retards the progress of exhaustion, as evidenced by the diminution or increase (as the case may be) in the action of the heart and respiratory movements, and the retardation in the rise of the internal temperature on exertion, We may for a moment enquire in what manner these effects are accomplished.

I have previously shown that the various functions, among which we may mention the respiratory movements, heart's action and circulation of the blood, temperature of the body, &c., are all under the influence of the brain and nervous system, and that for the proper performance of these, a due proportion of nervous force is required, and if that force be diminished by any means whatsoever,

we shall have irregular action in the various functional processes. And further, that not a single organ or function can be disordered without modifying, in greater or less degree, the action of others, and that the nervous system is dependent upon the food which it derives from the blood, and the blood is under the influence of, and modified by, the impressions conveyed by the nervous system. We thus see that in order to maintain equilibrium in these various functional actions the supply of nerve food must be equal to the expenditure of nervous energy; if this supply is not equal, then, the demand and expenditure continuing, there must be abnormal consumption of the body's tissues to supply the demand for force either in mental or physical exertion, or in the increased or vacillating actions of our internal organs in disease. If such is the case, then, a condition of exhaustion will be set up; or, in the presence of actual disease, exhaustion will be added to exhaustion.

Now, erythroxyton coca possesses an extraordinary property in that it is capable of restoring an exhausted Brain or body to a normal condition quicker than by any other means alone, and that without subsequent reaction. If we administer a dose of coca-leaf to a person who has performed some great physical exertion, or has abstained from food for a great length of time, he will, in a short time, find all symptoms of exhaustion disappear. Sir R. Christison gives the following which will somewhat illustrate this point. "Two of my students, out of the habit of material exercise for five months, tired themselves thoroughly with a walk of sixteen miles, in the month of April. They returned home at their dinner hour, having taken no food since a nine o'clock breakfast. They were very hungry, but refrained from food, and took each an infusion of two drams of coca (rather a large dose!) Presently.

hunger left them entirely, all sense of fatigue soon vanished, and they proceeded to promenade Princess-street for an hour ; which they did with ease and pleasure. On returning home their hunger revived with intensity ; they made an excellent dinner ; they felt alert all the subsequent evening, slept soundly all night, and next morning awoke quite refreshed and active.”—*British Medical Journal*.

I could adduce many cases of cure of various forms of disease in which erythroxyton coca has been the only remedy used, and others in which I have combined this drug with other ingredients. But as a number of such cases would occupy more space than the size of this volume will allow, therefore, I shall only give three. The following (Case 1.) is an extraordinary case of cure ; the patient was suffering from acute inflammation attended with complete exhaustion.

CASE 1.

Mrs. A. was delivered of a child after a protracted and difficult labour, which was attended with subsequent profuse hemorrhage. About 24 hours after delivery she presented symptoms (almost constant vomiting, &c.,) which gave her husband and attendants much uneasiness. When her doctor called, on this day, he expressed himself that great care would be required to prevent her from getting worse, he prescribed medicines for her, and ordered a small amount of wine to be given, to revive his patient, as he said. Towards midnight, she appeared to be much worse, the doctor was sent for, when he arrived and examined her, he altered the medicine. But, however, she did not improve. The symptoms became of a graver nature, so that, the next morning, another doctor was called in, and the two consulted together respecting the case ; the second doctor coincided with the opinion of the first doctor in regard to

treatment, but, a greater amount of wine was ordered to be given, and that the child be taken from her, which of course was done. She continued under this treatment until the seventh day, when the two doctors stated their opinion to be that she could not recover. Naturally, the husband and friends of the lady were greatly distressed, fearing a speedy dissolution. Some of her friends having been successfully treated by myself, persuaded the husband to send for me. I went; when I heard the above statement, and the following particulars, I gathered upon examination: countenance pale and sunken, marked by an expression of anxiety; perspiration, with occasional attacks of chilliness; almost constant nausea and vomiting after taking food or medicine, pain, tenderness, and enlargement of the bowels from the accumulation of gas. Fever; pulse 126 per minute, small, wiry, and weak; temperature of the body, 101° F.; respiration hurried and anxious, and performed principally by movements of the thorax, those of the diaphragm and abdomen being more or less suppressed. Tongue, dry and brown; bowels rather torpid, feces offensive. Pain in the head; occasional delirium; want of sleep. Great exhaustion, the muscular powers of the patient appeared quite overwhelmed.

The reader will see that the patient was in a very precarious condition, and will not be surprised when I say that I told her friends that I could give them no hope. But they pressed me to try. I did so. I immediately ordered the wines, &c., to be discontinued, as their use I considered to be highly injurious in such a case. Having with me a small bottle of a preparation of Coca, I administered to her small doses of it, but repeated every ten minutes. The first and second doses

were vomited almost immediately after they were given (the nurse stated that vomiting had occurred during the eighteen hours preceding, after each particle of food or medicine had been given), but the third dose remained on the stomach. Proceeding with these doses during a period of one hour, the patient, to the surprise of all, began to revive somewhat; the doses were then administered at intervals of fifteen minutes. Two hours after the first dose was given, the patient took a small amount of food, and then dropped off into a nice quiet sleep, such a one as she had not had since her confinement; this continued without interruption for a period of two hours. She awoke somewhat refreshed, a dose of medicine was given, and likewise a small amount of food. The doses of medicine were given throughout the day at intervals of one hour. At the expiration of six hours from the administration of the first dose the pulse beat 100 per minute; the temperature of the body, and the frequency of the respiratory movements were greatly diminished. When I visited my patient at night she was in a comfortable condition, and was certainly considerably improved; no vomiting had occurred since the administration of the second dose of the coca preparation. At the end of a week from my first attendance she was able to leave her room; and at the expiration of fourteen days was able to go a ride of four or five miles distance and fetch home her infant.

Case 2 will illustrate the action of coca-leaf in cases of extreme nervous debility of long standing; and also its action in raising an abnormally low animal temperature, respiratory movements, and pulse to a higher and more normal condition.

CASE 2.

In 1875. I was consulted by a gentleman, aged 34,

who had been suffering for a period of ten years from nervous debility brought on by intense mental exertion. He had consulted noted physicians in the metropolis and in many of our cities, towns, and watering places noted as healthy places of resort, and had spent hundreds of pounds in fees and for medicines. For months he had been compelled to lie in his bed three or four days in nearly every week; and had not been able to walk out for many months. On examination I found him to be suffering from pains in the head and small of the back; frequent attacks of neuralgic pains all over his body; palpitation, and occasional pain in the region of the heart; lassitude; tremulousness; extreme fear; great irritability, and frequent pain in the stomach with nausea and occasional vomiting. His food which at one time would suit him admirably, another time caused him a great amount of unpleasant sensations; appetite irregular, at one time could eat almost anything, then again, he would not be able to partake of any food whatever, for a time, and as a consequence was very much emaciated and reduced to almost a skeleton. Pulse 62 per minute; temperature of the body 93° F. Bowels costive, slight pain in the chest and sides, but no cough. Sleep generally of a disturbed nature, dreaming, starting. He was truly in a pitiable condition.

Treatment was commenced by the administration of "Brain Feeder," the chief ingredient of which is Erythroxylon Coca, as a medicine; the bowels to be regulated by the use of Chionanthus Liver Pills; and Compound Essence of Cocaine as a diet drink. Advised him to discontinue the use of all wines, and other alcoholic drinks, which had been so freely recommended to him by his former medical advisers. Gave directions that his body be sponged every morning with a mixture consisting of the following in-

gredients, viz: Soft water one pint, common salt four ounces, compound essence of cocaine two tablespoonfull; after the sponging dry friction to be used. After one month's perseverance with the above treatment, I was able to record some little improvement. The pains in the head and sides were much diminished in their number of attacks; appetite more regular; the average number of beats of the pulse per minute during the three days preceding the end of the month had increased to 65; temperature, average of three last days of month, had increased one degree, viz. 94° F., and for fourteen consecutive days of the month had not been compelled to keep his bedroom during a whole day. At the end of second month the pulse beat 68 per minute; temperature of body 95° F. Able to sleep soundly, pains in the head and sides were only occasionally felt, was able to walk and ride out short distances. Absence of palpitation and pain in the heart's region. Stomach in a stronger condition. Tremulousness absent during the last week. And at the end of five months treatment with coca medicines was restored and able to resume his duties.

The next case (case 3) is an interesting one showing the induction of Pulmonary Consumption in a young man directly brought on by Brain Exhaustion caused by *venereal excesses*.

CASE 3.

A young man, age 36, was brought to me evidently suffering from pulmonary consumption, in an advanced stage; he had been given up by several eminent physicians as incurable. The symptoms under which this gentleman was suffering, were—in short—the following: a very distressing cough, pains in breast and side, expectoration of large quantities of phlegm; bowels very much relaxed; **excessive** night sweats; falling off of hair; paleness of

countenance, with occasional hectic flush; did not keep his bed because cough was worse when in a reclining position, but unable to walk a distance of 100 yards. Pulse 126 per minute. Ascribed his complaint as a consequence of long continued sexual excesses.

We commenced treatment of this case by giving a mixture according to the following formula:

Rp.	Syrup of Hypophosphite of Iron.	
	"	Soda.
	"	Lime, each 3 ounces.
	Glycerine extract of Coca-leaf, 3 ounces.	
		mix.

Dose: two teaspoonsful three times a day. And also ordered one of my chest pills to be taken three times a day.

This treatment was continued for a period of six weeks; at the end of that time the improvement in the condition of the patient was remarkable. The night sweats had entirely disappeared; cough and expectoration *greatly* diminished; appetite improved; and had increased about twelve pounds in weight, and was able to walk with comparative ease a distance of two or three miles.

In order to test whether this decided improvement was really due to the presence of the preparation of coca-leaf in the mixture. I determined to give him two teaspoonful-doses of the mixed syrups alone, this was continued for four weeks, when I found that the patient had sunk very low again, the cough was again becoming distressing, expectoration increased, with night sweats; and he had lost nearly six pounds in weight. This deciding the point which was raised in my mind as to whether the improvement was due to the syrups or the coca-leaf. I again gave the syrups with the coca-leaf extract, when improvement in the course of a few weeks again became decidedly apparent and proceeded.

Now to the question as to how and in what manner coca-leaf accomplishes the results which are consequent upon its use.

It has been shown that all the various processes are under the influence and governance of the force conveyed through the medium of the brain, spinal cord, and their continuations—the nerves. Such being the case we may justly infer that Erythroxyton Coca influences the various functions by its action upon the great centres of the body; for it is only through these that a restorative action can be induced. What I here want to show is that coca-leaf produces these results by imparting nerve food which is converted into nervous energy and thus increasing the total amount of nervous energy and consequent governing force. The functions of the nerves are only restored, when they have become exhausted by physical or mental toil or disease, till after rest etc., proportioned to the amount of exhaustion. And if it can be shown, as we have done, that coca-leaf is capable of either retarding or preventing the condition of exhaustion, and likewise of restoring an actually exhausted body; and if this can only be done by restoring the natural or normal condition of the brain and nervous system, then, we may fairly conclude that the results proved to be consequent upon the use of erythroxyton coca are brought about simply and only by its imparting to that centre and diverging branches an amount of force which otherwise might only be obtained after partaking of rest and other things proportioned to the exhaustion. It is evident, therefore, that the prevention of that vacillating action of the internal organs generally consequent upon exertion, and likewise that the restorative action in cases of physical or mental exhaustion and in disease, is due to this increase in the governing force of the nervous system.

Third.—The use of Erythroxylon Coca is unattended with injurious results.

The German naturalist, Poppig, in a record of his travels (*Reise durch Chile, Peru, und auf dem Amazonenstrom, 1827-32*) gives the conclusion at which he arrived in respect to the use of coca-leaf by the natives, and considers it to be injurious to health, mind, and morals, as opium, tobacco, or alcohol. He says the natives who even do not use the leaf to any great excess must stop their work several times a day to chew their quid contemplatively, and are much displeased if disturbed in their placid enjoyment. But, in the end, Poppig states, the stomach gives way, countenance becomes haggard, and limbs emaciated; they can no longer take sufficient food to maintain their bodies, and even lose all relish for the enjoyment which has been insidiously destroying them; constipation sets in, which may be followed by jaundice, or dropsy, and thus at last life is cut short about the age of 50 by one or other of these maladies, or through simple extenuation or exhaustion.

This is an important point in the consideration of the properties of the leaves of this shrub. If it be such a narcotic, as Poppig seemed to consider it, then its use must be attended with such an amount of injury as would justify us in discarding its use by Europeans. But, in another part of this record, Poppig somewhat contradicts, or at least qualifies, the above description of its effects. He says "it has really wonderful power in supporting the strength under prolonged fatigue without food. Also that in his rides through the Peruvian forests (see page 155 of this book). He also says (which is contradictory to previous statements) that when his days' journey came to an end, he did not find his Indian attendants had at all lost

their appetites; for when done with work for the day, although they did not care for food while travelling and chewing (*simply because they did not require it.* Auth.), they made an excellent meal in the evening.

How Poppig could have come to the repulsive conclusion as above given I do not know; but it is highly probable that he was led to the conclusion from the observance of individual natives in whom the imbibition of alcoholic drinks was greatly indulged which habit, he says, was frequently conjoined with that of coca-chewing. It has been my opinion that he was playing into the hands of the priests.

Dr. Von. Tschudi (visited Peru in 1838), Dr. Weddel (at Bolivia in 1857), and Clements R. Markham (in Lower Peru in 1860), three gentlemen of undeniable repute, agree in stating that the repulsive statements of Poppig are considerably exaggerated. If it really was, and is, such a narcotic as Poppig states it to be, I really cannot understand, seeing that the natives eat somewhere about 40 million pounds of coca-leaves per year, we should think by this time that the coca-eating nations would become almost extinct, or, to say the least, very much physically degenerated and short lived; but we have it as an admitted fact that the South American Indians are physically the strongest and longest lived people on the face of the earth. To what can this be due except coca eating!

Excito-stimulants as alcohol, opium, and tobacco, first excite the nerves, and then exhaust them. What is the action of these drugs? We have treated upon *alcohol* in former pages, but we may here say that its action, in the first place, is such as to excite the nerves to a degree varying according to their condition and the amount taken, this excitement causes increased action in the internal

organs. But when the excitement subsides the individual becomes as much abnormally depressed as he was previously abnormally excited. *Opium* acts in nearly a similar manner. The opium eater is likewise in the first instance excited; he is vivacious, joyous, ambitious, and, for a time, defies the ills of life. While in other individuals a small dose will cause feverishness, headache, anxiety, restlessness, &c. But the state of excitement is followed by a condition of diminished sensibility in which the nerves are deadened; and, lastly, the condition becomes one of depression and exhaustion—a condition so far abnormally low, as, at first abnormally high. *Tobacco* is of the same class, and its use is attended by an amount of excitement with a greater amount of subsequent depression.

Now these and similar drugs are excitants and more than an equal amount of depression follows their use, and their exhibition in cases of exhausting disease certainly cannot have any supporting power, but, on the contrary, only allow the patient's power to be used up in a shorter time and is attended with subsequent exhaustion.

It has been urged that coca-leaf possesses properties which have similar effects to those above detailed as resulting from the use of alcohol, opium, and tobacco. This may be proved to be fallacious in two ways. 1st.—The use of coca-leaf is unattended with subsequent exhaustion. In proof of this we may refer to the extract from Sir R. Christison's address where he states that, "instead of feeling any degree of exhaustion, after his 16 miles walk with coca-leaf, he was alert all the subsequent evening, and next morning waked quite refreshed and the invigoration had not ceased;" another thing which that gentleman noticed was that after the walk with coca-leaf he was enabled to read with ease, there was a decided improvement in his

vision. Many other eminent gentlemen bear testimony to their freedom from subsequent exhaustion after the use of coca-leaf. I, myself, having used it for years, do unhesitatingly say, that never have I experienced any subsequent exhaustion, even when I have taken it in comparatively large doses. If it be a narcotic, then in the words of Clements Markham "of all the narcotics used by man, it is the least injurious and most invigorating." 2nd.—From my observations of the effects of the drug upon animals, I can say, that coca-leaf, when administered in what may be considered large doses, is without any injurious results whatever. I do not mean to say that the recent experiments, conducted by eminent men, with the alkaloid, cocaine, upon various animals have led to erroneous results; but I do say that to discard the use of Peruvian Bark because the excessive use of its alkaloid, quinia, produces unpleasant symptoms; that to discard the use of tea because *theine*, its alkaloid produces toxic effects; that to discard the use of wheat or bread because the phosphorus it contains would produce injury if administered in large doses; to do these things, I say, simply because one principle or compound contained in the article when administered alone, and in large quantities, produces injurious effects, would be indeed the height of folly and perfectly monstrous. Dr. Stark, of Vienna, for the purpose of experiment, lived entirely on concentrated food, such as sugar, starch, meat extracts, &c., and in six months they killed him. Had this eminent gentleman lived on wheat bread, and water or milk, he would, doubtless, have lived many years longer.

To a dog, weighing under 20lbs., I gave a dose of carefully prepared fluid extract of coca-leaf, representing six drams of crude leaves. In half an hour he became very

brisk, lively, and vivacious; eyes very bright and animated. I tested him in several ways in order to ascertain if any appearance of intoxication, drowsiness, or stupor made their appearance, but nothing of the kind was observed in the animal. To a cat I also gave the product of three drams of the leaves, but with similar results. Neither animal slept for more than seven hours after the dose, but during that period exhibited symptoms of liveliness and elasticity. The next day they were watched, their secretions and excretions were quite natural, and they presented no symptoms of depression.

I may now introduce an interesting discussion, on the properties of coca-leaf, carried on in the "*Replies to Queries*" columns of the *English Mechanic*. It was commenced by a query as to "what is the best form to administer Coca Leaf Powder to a lad who suffers from debility." To this query a correspondent, signing himself INCOG., followed with an admirable and lengthy reply, headed Coca Leaf powder, which appeared in the issue of the above well conducted journal, on August 18th, 1876. As this discussion illustrates well the value of coca-leaf and likewise the arguments that are urged against its use, I think it may not be advisable to let it be lost, therefore it is here reprinted from the pages in which it appeared.

The following is "Incog's" reply:

English Mechanic, August 18th, 1876.

[26672.] COCA LEAF POWDER.

"The best and most effective way of taking this I found to be in infusion, made by pouring half a pint of boiling water on 2 scruples to a drachm of the leaves, and then putting it in the side oven to "draw," filling up again to compensate for evaporation. Half of this taken warm at bedtime, and the remainder cold next morning, I found

sufficient to give me all the vital energy I required to go through some very heavy and exhausting work before dinner, and then through the remainder of the day's occupation with almost unimpaired energy. I did this work on Saturday, July 15, exposed to the sun, with the temperature in the shade at 93 degrees. I perspired pretty freely, of course, but much less than at considerably lower temperatures without the coca. I had no after lassitude or exhaustion whatever, nor did I feel any all the time I have been experimenting with it, and it has been through all this torrid weather. Contrary to the expectation, I found it no substitute for food, the appetite being very vigorous. There was, however, none of the nausea and "sinking" usually experienced with hunger, and the appetite was more easily satisfied. Both digestion and assimilation seemed, also to be perfect. I continued the experiment daily, with the good effects of feeling entirely free from any lassitude or weakness from the extreme heat which has prevailed, and with a keen relish for, and enjoyment of, every meal. But the greatest benefit I experienced has been *in extremis*, the excessive perspiration of the feet being so mollified and subdued (without suppression), that the rawness and irritation was almost entirely absent, whilst the step was as buoyant and careless as could be desired. Knowing pretty well the action of most of our stimulants and invigorators, I have closely watched for the appearance of any reactionary or prejudicial after-effects, but I have failed to observe any. I discontinued its use, then, for one week, to see if any of the usual depression followed; but I merely missed the previous high vigour and lightness, which was restored next day by the first "potion." As to its action, it is not narcotic, as the sleep induced was immediate, calm, unbroken, and refreshing. It is not astringent (or congestive), as all

the mucous surfaces were moist and supple, and the trifling lingering remnants of a winter's asthma and bronchitis came up without cough or other forcible effort, without any "tightness" or difficulty of breathing. As to its expellent effects, I chewed the leaves on first going off, which was followed by the appearance of several small ulcers on the tongue and mouth, and inside the cheek, which I was not surprised at, as I had only just got rid of a relaxation of the uvula and neighbouring inflammation of three weeks' continuance. Several small boils also appeared about the temples and neck. Its further use in infusion was accompanied at first with some little irritation of the skin, and the appearance of what are commonly termed "heat-bumps," both of which however, soon disappeared. I am more particular in alluding to this expellent action, because there are few of the tissues or organs of the body that are not more or less charged with the effete or worn-out matter of "combustion," and it is these accumulations which are acted upon most powerfully by any increase or excess of vital energy, causing chemical changes and appearances which are the "forms" of disease; such appearances are well-known phenomena of the water-cure, and are hailed as the best prognostics of its efficacy and healthful action. In my own experiment I do not think there was much material for external expulsion, as an eight months' more or less persistence of bronchitis and asthma had pretty well cleared out what effete matter I could have accumulated. I have had, however, another opportunity of testing the therapeutic action this week. Being at Hastings on Sunday, I had walked and climbed over the cliffs and glens to Fairlight and back, and was met on the last cliff on my return by a well-meaning but injudicious friend who persisted in "button-holing" me. In vain I urged upon him that I was

wet through with perspiration, and that the strong keen wind on the exposed cliff was chilling me to the bone. At last I broke away, but not before I had received enough mischief to produce by Tuesday a severe catarrh, sore throat, and incipient bronchitis. I at once used the chlorate of potass in a gargle to arrest the congestion, and turned to the coca. This has restored the vital force, and, moving the fluid circulation back to the skin, I am now, on Friday, again sound in wind and limb. Had the coca being a narcotic or an alterative of an astringent nature, I should have been left with more or less dryness of the throat, cough, and "tightness" of the chest, of which not the slightest traces are apparent. I should thus esteem it a very valuable remedy for diseases of the throat or lungs, and more especially for consumption, wherein I have used remedies of an analogous nature and action with the best effects. It will be seen that I have not combined it with either the lime or soda mentioned in your articles on the subject. The lime might be the means of the food displacement experienced by the South Americans, as preventing the destruction of tissue, but its absorption and combination with the 'spent' gelatine and albumen thereof would ultimately be of serious prejudice to well-being, and the source of the serious after evils attributed to the use of coca itself. There would, I think, be a wasting of the softer parts of the body, and a general concretion of the muscular substance, rendering the limbs inert and powerless, and finally in a condition analogous to that of chronic rheumatism. Soda, by its solvent powers over the humours and tissues, would, of course, have a contrary effect; but its drying and wasting effects upon the fibres and tissues are, I believe, such as render it a very doubtful remedy. My observations and experiments have been with

a view to determine the action of the coca itself, and I am extremely satisfied with the results.”—INCOG.

Several gentlemen having called my attention to the appearance of the above excellent letter, I determined, after a delay of seven or eight days, to write a letter endorsing the statements of “Incog,” and likewise giving my opinion of its value and uses; the appearance of the following was the result:

English Mechanic, September 1st, 1876.

“COCA LEAF.—I read “Incog’s” reply on page 599 with great interest, and the statements therein contained I fully indorse. I regret to say that there is scarcely a good sample of these leaves to be obtained in this country, and the various complaints published regarding the effects, and stating that the users have received no benefit, have been doubtless due to the inferior quality of the article obtained. I have received numerous samples since my letter to the *Standard* of march 20th from parties requesting an opinion respecting the quality of leaves purchased from various establishments in this country, but I am sorry to say that I have not received a good sample. They were certainly coca leaves, but instead of being a dark green were of a brown colour, and so deteriorated as to be comparatively inert and worthless. The leaves, after they arrive in this country, will not keep for any great length of time, and especially if there has been any carelessness in the gathering, drying or packing for exportation. I would suggest that as soon as possible after the arrival of the leaves in this country they should be macerated in a mixture of spirits of wine (one part) and distilled water (seven parts); or it would be a great advantage if some one of the London wholesale druggists would take a special interest in the coca leaf, and have it properly dried, pressed, and wrapped

in half pound or one pound packets. In such a condition it would keep, with ordinary care, for a length of time. I fear that unless some other means than at present are adopted to preserve its qualities, the people of this country will not be able to obtain the full benefit derivable from the use of the leaves of *Erythroxylon Coca*. The physiological effects are directly upon the brain and nervous system, and by its action upon the governors of the vital acts of the body, it prevents undue exertion of the internal organs, and, likewise, that undue waste of the tissue of which the organs are formed, which follows as an effect of physical or mental strain. The action of coca tends to diminish the amount of solids in the urine—to diminish the amount of urea produced. This urea is a constant production of the body, and under the influence of bodily or mental exertion a greater amount is produced, and the amount of this urea is in proportion to the waste of tissue. Coca regulates and greatly assists in maintaining that equilibrium of action of heart and capillary circulation which is so necessary for the maintenance of an unexhausted and unfatigued state of the body. Exertion of the muscles frequently draws an increased supply of blood to the parts exercised, as in persons who have to make a little extra muscular exertion the vessels will necessarily dilate excessively, and if the action of the heart is not correspondingly increased in frequency, there will be an alteration in the arterial tension, it will fall, and the pulse will give rise to a sensation as though it were a double pulse. If, on the other hand, the heart's action is excited and increased abnormally, while the muscles do not require a supply of blood much greater than ordinary, then the tension will be increased, and the great amount of obstruction caused by arterial contraction will throw a still greater amount of work upon the heart.

Brain exhaustion, caused either by mental or physical strain, will give rise to such abnormal action, as will also cause an increase in the amount of effete matter in the blood in such states of the body in which the excretory organs are obstructed ; alteration in nutrition during exertion. Low arterial tension, by increasing the supply of blood to the muscles, decreases the supply to the brain. The ill supply of food to this organ, and, consequently, to the whole nervous system, produces a feeling of fatigue, and there is also a rise of the internal temperature. On the other hand, increased arterial tension throws a greater strain upon the heart, which becomes overtaxed, dilated, and there are produced breathlessness, a sensation of lightness in the head, etc. Coca, by its toning action on the nervous system, increases the amount of nervous influence over the whole organism, diminishes the waste of tissue, regulates the various functional actions—as circulation, excretion, etc.,—and prevents such results as above given. Thus its efficacy as a therapeutic agent in all forms of disease cannot be doubted. In consumption, in inflammation, in fevers, in which states of the system there is an increase in temperature, disorder of nutrition, abnormal disintegration of the tissues of the body—nervous and muscular fibres, increased production and excretion of urates, carbonic acid, etc.; in the brain exhaustion consequent upon mental labour, and in the fatigue produced by physical exercise. In all states and conditions of men coca is invaluable both as a preventive of exhaustion and a repairer of wasted tissue. In all the years through which I have used these leaves, I have administered them in large and small doses, to man and animals, without inducing, in any one case, injurious effects, but always, on the contrary, the beneficial results required.”—

WM. TIBBLES, SYSTON, LEICESTER.

This letter roused one gentleman, and evoked a reply from him, in which he appears at once the champion of that class of individuals who absurdly denounce the use of all such drugs as coca-leaf, but who, doubtless, have no objection, no, not the least ! to the use of mercury, arsenic, aye, and even will resort to blood-letting.

“ *English Mechanic*, September 15th, 1876.

“ [26672] COCA LEAF.—I read Mr Tibbles’ reply on this subject with a good deal of interest, but his inferences are superficial, and will not bear analysis. He says, to begin with, that the ‘action of coca is to diminish the quantity of urea in the urine, and that, as the amount of urea increases in proportion to the waste, its action is obviously to reduce that waste. Now, it is certain, *cæteris paribus*, that a given amount of exertion will cause a given amount of waste, and *pari passu* a proportionate quantity of urea, and if by the administration of coca, or any other drug, the excretion of urea is arrested or diminished, its ‘beneficial’ result will be to produce a tendency to a disease called ‘uræmia,’ or poisoning by urea. I cannot understand either in what sense coca can be called a ‘repairer of waste tissues.’ The elements of which muscle and tissue are built up can be obtained from food, and food alone, which supplies the nitrogenous matter, taking the place of the waste product. In what way, then, can coca repair them ?

“Again, as a ‘preventive of exhaustion,’ its action is to deaden the sensibility of the nerves, in the same way as that of opium. It is like loading the safety valve of a steam engine ; muscles in action require an increased supply of oxygenised blood, and by diminishing the supply to the brain and nerve centres causes a sense of fatigue. So far so good. But if the arterial tension is increased by the influence of coca on the sympathetic nervous system,

the supply of blood to the nerve centres is increased at the expense of the muscles in action, and as the sense of fatigue is overcome by the artificial supply of blood to the brain and nerve centres, the muscles are kept in action with a deficient supply of nutriment. Can such a 'preventive of exhaustion' be deemed expedient or safe? The benefit to be derived from coca in cases of mental overwork, and consequent depression is, to say the least, problematical. Sleep relieves the brain, by lessening the supply of blood (vide 'Maudsley on Insanity'), and the influence of coca is to increase the flow, thereby exciting instead of relieving the brain. My own inference from Mr. 'Tibbles' reply is that, however pleasant its effects may be, it is, in a therapeutic point of view, hurtful instead of beneficial.—GUBB SECUNDUS."

To this, I replied as follows:—

"*English Mechanic*, October 16th, 1876.

"[26692.]—COCA LEAF.—Allow me to say, in answer to 'Gubb Secundus'—1. Coca does not act by arresting the excretion of urea (meaning by the term 'arresting' that the urea is produced but its excretion obstructed), but, by its influence, the wear and tear of the textures of the body during the exercise of their functions is considerably lessened, and consequently the production of the waste products, among which is urea, is diminished. The following are the results of some experiments by Sir Robert Christison, Bart.:—Determination of the amount of solids excreted per kidneys during twenty-four hours of, 1st absolute rest = 215·5 grains; 2nd, exercise = 250·3 grains; and, 3rd, exercise, during which coca was used = 197·2 grains. These results are thoroughly confirmatory of my own experiments, and did coca act merely as an obstructor to the excretion of urea, though produced, as

G.S.' infers, I myself should certainly be suffering from uræmia consequent upon the almost continued use of coca; but, instead of this, I never was better in health, although some years since pronounced an 'incurable consumptive.'

2. Coca is a highly nutritious article containing a quantity of nitrogenous matter, and, when administered in a liquid form, is capable of easy and quick transformation into the nutritive blastema necessary for the repair of the wasted tissues. 3. In reply to my statement that coca is a preventive of exhaustion, 'G.S.' says, 'its action is to deaden the sensibility of the nerves in the same way as opium.' This I deny. Opium temporarily excites the brain and nervous system, and then produces a condition of diminished sensibility, and the patient afterwards sinks to a state of nervous depression. Coca, on the contrary, is a powerful supporter of the nerve force. 4. Again, 'G.S.' says 'that the supply of blood to the brain and nerve-centres is increased at the expense of the muscles in action, and as the sense of fatigue is overcome by the artificial supply of blood to the brain and nerve-centres, the muscles are kept in action with a deficient supply of nutriment.' Were the action of coca thus it would indeed be injurious; but it is not so. Coca prevents exhaustion by its toning influence upon the brain and nervous system, increasing its power, and consequently its control over the various functional actions, whereby they are regulated and influenced so as to keep up an equilibrium. In an exhausted condition of the body, the direct result of diminished nerve power, we have generally increased internal temperature, increased circulatory movements, and increased respiratory movements; or, as in some diseased conditions, one organ may stand still, another may act, and perhaps in the right course, but with intermitting action,

while a third may endanger itself, as it were, and everything near it, by the rapidity and eccentricity of its action. Coca increases the nerve-power, and consequently the influence of the brain and nervous system is sufficient to regulate and equalise the supply of blood, and also the action of the organs. And further, that it prevents exhaustion by diminishing the waste of tissue. I again refer 'G. S.' to Sir Robert Christison's address (which appeared in the *British Medical Journal* for April 29th, 1876), where he not only states that the excretion of solids is diminished, but that coca also diminishes the excitement of the circulation consequent upon exertion. 'The pulse,' says Sir Robert Christison, 'naturally 62 at rest, was, on my arrival at home, 110, and, two hours later, was still 90,' after exercise without coca. But the arterial excitement consequent upon exertion with the use of coca is much diminished, for Sir Robert Christison, after exercise with coca says, "On my arrival at home the pulse was 90, and in two hours had fallen to 72; the excitement of the circulation being thus much less, and its subsidence more rapid than after the same amount of exercise without coca." By the use of coca the abnormal frequency of the respiratory movements is diminished. Dr. W. Bernard (*British Medical Journal*, June 17th 1876), giving notes of a twenty-four miles' walk, at the end of which a hill (Mamore-hill) 1,381ft. high was ascended, says, "hurried breathing and fatigue began to be felt when about half way up the hill." He then took more coca, "and," he says, "before I arrived at the top, though still continuing my rapid pace, my breathing was considerably relieved." Clements R. Markham, in his "Travels in Peru," also bears testimony to its value in preventing difficult breathing. If, then, the circulation of the blood is regulated, the frequency of

the respiratory movements diminished, and the excretion of the urea lessened, there must be less waste of tissue, and consequently exhaustion is prevented. 5. Again, "G. S." says, "the influence of coca is to increase the flow" (of blood), "and thereby exciting instead of relieving the brain." Coca, as before stated, acts by regulating the flow of blood. If the brain is already excited by the determination of a too large amount of blood, then the coca, by influencing the nerve-centres—increasing their power—regulates the dilatibility and contractility of the blood vessels, and thus the flow is diminished. In conclusion, I still say that its efficacy as a therapeutic agent is invaluable; and, as a preventive of exhaustion and a repairer of wasted energy it is unequalled, and its use is unattended with any injurious results."

WILLIAM TIBBLES, SYSTON, LEICESTER.

On the same date appeared another letter from INCOG, in reply to queries anonymously signed "Querist." But as it is of great length and is not wholly confined to the subject, I shall only give extracts.

After describing the action of the falsely so-called stimulants—alcohol, opium—he goes on to say; "Now I can find no such effects to flow from the coca as yet. I had left it off during the late cold change. I got a feeling of chilliness, followed by an attack of neuralgia. But I found that both were "epidemic," so I did not lay it to the coca. On the contrary, I made it the basis of my treatment for the sake of the refreshing sleep, and got it, and a return to health as well. As to the particular case of "Querist," for which he seeks advice, the symptoms he enumerates are scarcely those from which I could draw just conclusions as to the true nature or seat of his disease, or the precise remedies and treatment." Then after ex-

amining and contrasting at great length the particular case of "Querist," he then proceeds "To his trying an experiment with the coca I would not oppose the least objection as a simple vegetable principle, and not a subtle and powerful drug. If it does any good in overcoming the disease, it will be simply by the decomposition of its alkaloid principle in the stomach, and its conversion into energy or life. The product will be the animal heat, here so grievously deficient. This will expand the frame and counteract the external pressure, so that the blood will circulate without the excessive muscular action of the heart, now necessary to force it through the frame at the cost of so much irritation and exhaustion. The food will also undergo proper digestion and conversion, and be carried forward into the system to replace the abstraction of the disease. . . . It may be that the coca may show no invigorating qualities whatever; but it will none the less do its work, as there may be such an accumulation of tuberculous or tumefied matter as will absorb and render latent all its evolved energy in maturing, dissolving, and breaking up the concretions. If so there will then be a great increase of the expectoration, either constant or intermittent, which will go on till the exhaustion of the disease, when the invigorating properties of the coca will be felt. Such a case will merely require an increase of the quantity taken, and if the appetite and consumption of food is good, with but little waste (as shown by costiveness) and the weight of body does not decrease, the work of cure is going on well."

In concluding the remarks upon this case, INCOG says "Live plain—no sweets, and as little vegetables as possible, if they produce flatus. . . . No wine or spirits, and no draughts of cold liquor of any kind, or of any

effervescent. Shun opium as you would death, and avoid all mineral acids as medicine if you can. Thus aided, I think the coca will afford great benefit, and, with free expectoration and no further loss of weight or strength, will work a cure ultimately."

To my last (Oct. 16th) "Gubb Secundus" ventured the following reply, in which he makes a somewhat startling assertion, namely by denying what he in the same sentence admits to be a fact. The candid reader will, I think fail to see that he has impugned any statements in my previous letters.

English Mechanic, Oct. 26th, 1876.

[26692.]—"COCA LEAF,—Mr. Tibbles still fails, to my idea, to carry out what he wishes to prove about this drug although he has now somewhat altered his language. I have read Sir R. Christison's report and many others, but my conclusion, after reading them and after taking it repeatedly myself, was that it was simply and only a stimulative drug. The mere duration of its influence does not bear on the question whether it is a temporary excitant, such as Mr. Tibbles says opium is, or whether it lasts till it is no longer needed. The fact remains the same. I question, I may even say I deny, the fact that there is any more "nutritive matter capable of being converted into blastema (?) " in the coca leaf than there is in tea, and it must certainly fall short of cocoa. I never heard it asserted before that coca went to repair the tissues, although I have heard it said to "arrest the wear and tear." I should like Mr. Tibbles to explain what he means by coca being a "strong supporter of nerve force." If he means that under its influence persons are able to walk distances unattainable under ordinary circumstances I say at once he uses an erroneous expression. The fact is coca is so far useful that

it enables a person to use himself quite up, so to speak, for a person not "in training" tires long before his supply of strength is used. He needs a stimulus, moral or physical; excite him with news, give him a pipe of tobacco, or some coca leaves, and he is off, forgetful of the fatigue of which he but this moment complained. So far does coca act, but still as a stimulant. Further on Mr. Tibbles speaks of it increasing the nerve force. What an anomalous expression again! If A represents the motor force resident in a given nerve centre I should like to know how that initial force can be increased by a drug which can convey no strength or motor-force *per se*. The action (that of a depressant upon the heart) is sufficiently manifest from the instances cited from Sir R. Christison's experiments upon himself. If Mr. Tibbles thinks it has an emendatory effect I can furnish him with a drug which will do the work far more efficiently than coca, and could at a pinch stop it altogether. I mean digitalis. Then in reference to its action upon the lungs, why do the lungs increase in frequency of action after exercise? Because there is an abnormally large supply of unoxxygenised blood waiting to be aerified, and if you forcibly moderate the number of respirations you do so at the expense of the unpurified blood. In fine, my advice to those wishing to preserve a *mens sana in corpore sana* is to abstain from the use of any such pernicious drug. If Mr. Tibbles 'eats and grows fat' on it, as he tells us he does, in another dozen years we may say, '*Audi alteram partem.*'—GUBB SECUNDUS."

In reply to this I forwarded the following letter:—

"*English Mechanic*, Nov. 24th, 1876.

[26692.].—COCA LEAF.—'Gubb Secundus's,' last reply, I must say, is a superficial one. He appears to think I altered the tenour of my last. This, I certainly fail to see.

If it is so, then it is unintentionally done. G.S., after reading the reports of various experimenters, and after taking it himself, concludes that coca is "simply and only a stimulative drug," and that the duration of the excitement, whether short or long, does not bear upon the question; but 'the fact remains the same.' If coca be 'simply and only a stimulative drug,' how is it that, according to Sir Robert Christison and others, it is found to reduce the undue excitement of the arterial circulation consequent upon exertion? How is it that, according to Clements R. Markham and others, it is found to reduce or prevent difficulty and rapidity of breathing? Again, how is it that, according to Dr. Bennet, it is found to reduce or prevent that undue rise in internal temperature which is a frequent consequence of exertion? Thus, instead of coca being an excitant, its action is contrary. Respecting G.S.'s denial of 'the fact' that coca contains more nutritive matter than tea, in making this statement I did not do so without thought, and though G.S. denies it, yet in word he admits it as a fact, which, if really such, cannot be denied. Tea consists of thein, tannin, inert extractive matter, and mineral matter. Coca consists of the crystalline alkaloid cocaine ($C_{16}H_{19}NO_4$), the oily alkaloid, hygrine, coca-tannic acid, coca wax, chlorophyl, extractive, and lime salts. Thus, from the constituents, it is very evident that coca leaves contain a larger number of constituents capable of supplying food stuff; and likewise, according to reports by various travellers, it is also very evident that the South American Indians, who consume a large quantity of these leaves, are able to work, and that laboriously, with a very small amount of other food. If coca did not supply nutriment, they would certainly be unable to work as they do, with their frequently scanty

supply of food. Coca is a 'strong supporter of nerve force,' in the sense that under its influence persons are able to perform their ordinary and extraordinary labour without the presence of the usual depression which is a general consequence of the excitement caused by work or overwork. The fact that a person under its influence is capable of walking distances otherwise unattainable, is simply because coca reduces or prevents excitement in the action of the internal organs, and, as a consequence, the amount of waste which would otherwise take place is prevented. In reference to what G. S. says about the stimulative action of tobacco and news, and the action of coca, there is, generally, a certain amount of depression constantly following the excitement produced by the two former, whereas, after the use of coca, there is no subsequent depressive action on the brain, &c., but as I and many others have frequently proved, when taking coca, the effect has been that work is performed with ease, sleep sound, and next morning waking quite refreshed, and in excellent mental and bodily condition. I fail to see any anomaly in the statement that coca increases nerve force. G. S. says:—"If A represents the motor force resident in a given nerve centre, I should like to know how that initial force can be increased by a drug which can convey no strength or motor force *per se*." But the force may be increased by the action of coca, and that in two ways: 1st.—Coca increases the nerve force *per se*, and to this many eminent men bear testimony to its value as a substitute for other food, among whom may be mentioned R. Spence, Bently, Prescott, Wittingham, &c. 2nd.—The motor force in a given nerve-centre is increased by the action of coca in that it prevents the undue expenditure of the force already present in the given nerve centre, when

at the same time the transformation of force from the imbibed food-stuff is the same, or equivalent to the amount previously transformed. Thus the transformation of food-stuff into force is the same as usual; yet, owing to the action of coca, the expenditure is less than would otherwise be; or, in other words, the production is the same, but by the influence of coca, the demand and expenditure are diminished. How can coca be 'simply and only a stimulative drug' if it has what G. S. calls a depressing action on the heart? But the action of coca in thus decreasing the action of the heart is simply that of increasing the quantity of nervous force and consequent control over the heart's action, whereby the excitement is diminished. I certainly do not see much analogy in the action of coca and digitalis. The action of digitalis, I might almost say, is 'simply and only' that of narcotic and arterial depressent, whereas, as I have previously said, the action of coca, whereby the heart's action is controlled, is simply by arresting the wear and tear of the tissues, and, consequently, what may be called the resident amount of nerve force in the nerve centre which supplies and controls the heart, is not relatively diminished; therefore, there is an absence of that excitement, which, under ordinary conditions, is present as a consequence of expenditure and want of regulative force. G.S., I think, altogether fails to see the drift of my last letter. In reference to what I stated in relation to the action of coca in preventing difficulty and abnormal rapidity of breathing, G. S. asks the question, 'Why do the lungs increase in frequency of action after exercise?' His answer is, 'Because there is an abnormally large supply of unoxygenised blood waiting to be aerified, and if you forcibly moderate the number of respirations, you do so at the expense of the unpurified

blood.' But the action of coca, by arresting the wear and tear of the tissues, diminishes the expenditure of the oxygenised constituents of the blood, and therefore the quantity of blood in a given space of time requiring aerification is diminished, and as a consequence the need for more rapid respiratory movements is likewise diminished.—W. TIBBLES, Syston, Leicester."

As "Gubb Secundus" did not reply to this last letter, the discussion was closed.

CONCLUSION:—We may conclude this chapter briefly. The body under exhaustion and disease requires the exhibition of medicines which will aid nature by imparting nervous energy; to do this erythroxyton coca is a drug which will fully meet the demands. Coca-leaf, in the first place acts, we may say, by increasing and equalizing the nervous influence or governing force of the Brain and nervous system over the various functional actions, and retarding or preventing that vacillating action of the internal organs, and as a prophylactic against depression and exhaustion. Secondly, the recuperative powers of the leaf are truly astonishing. It is a real and *true tonic* and nerve food, hence it is very evident that it is eminently valuable as a therapeutic agent in all forms of disease, acute and chronic—in all deviations from nature's equilibrium—in all cases where vital energy is deficient. Its potency in causing a renewal of life in the whole Brain and nervous system is such that its therapeutic use is almost unlimited, and I do say that it is unequalled by any other remedy extant as a preventive of that destructive metamorphosis which is so great in some forms of disease. I have extensively used coca-leaf, in various combinations, for a series of years, and in thousands of cases, but never have observed any injury resulting, even when its use is continued and in large doses.

My attention having been devoted to the study of these leaves for a number of years (as before stated) and having laboriously directed a number of experiments in order to ascertain the best mode of obtaining the whole of the properties from the coca-leaf, and likewise the best combinations suitable for various forms of disease, and for general purposes, I have succeeded in discovering several combinations, which with the general restorative properties of coca-leaf combined with other ingredients, are specially adapted for the class of diseases for which the combination is intended. These preparations have been the means, in private practice, of restoring thousands of diseased individuals; and I do unhesitatingly declare that wherever my medicines have been timely adopted and taken according to directions, with due regard to diet, cleanliness, &c., I have not, in a single case, known a failure in producing the desired effect.

The whole of the properties of coca-leaf are obtained by a difficult Pharmaceutical process, the apparatus necessary for which is of an expensive character, and, therefore, that the public may have preparations of these leaves of a genuine quality they are placed before the public and are obtainable through chemists &c. I shall continue to superintend their manufacture for they require such an amount of skill, time, and labour, that if left to be prepared by medical men in general or the public themselves, they would, in a great number of cases, be rather imperfectly prepared, or the quantity prepared at a time, so small as to make the cost of preparation an exorbitant one; therefore I think unprejudiced individuals will not consider this course unjustifiable. Objection may be urged regarding the propriety in not publishing at large, but concealing, the composition of my several medicines, but to insure the proper amount, the purity, and the genuineness of the various ingredients, I think it is quite a warrantable course.

CHAPTER IX.

SYMPTOMS, CAUSES, AND TREATMENT OF THE MORE COMMON FORMS OF DISEASE.

In this chapter I propose to treat of the more common forms of disease, their symptoms, general causes, and the treatment of them. This latter part, viz. their treatment, I shall give in two forms, to suit two classes of individuals, 1st, those who are content to use my own preparations, and 2nd, those who prefer to make or prepare their own medicines entirely.

In order that the following pages may become a "Family Adviser" and a real "Friend in need," the treatment of a disease will be stated as simply as possible, so that the individual who is attendant upon the patient shall be able easily to conduct the case to the desired consummation—viz, a cure. The treatment is not founded upon mere conjecture, speculation, or the untried opinions of others, but solely upon many years of a large and practical experience; thousands of individuals have proved the truth and value of the treatment which I am about to lay down.

It is usual in commencing a popular treatise on forms of disease to first treat of the commonest form—viz, common cold—but I prefer to depart from this common custom. I shall, therefore, treat first on Consumption, which is a disease very prevalent in this country,

and one clearly traceable to Brain Exhaustion as its origin.

CONSUMPTION.

This terrible disease, consumption of the lungs, to which all mankind are liable, is cruel, sweeping, and despotic in its ravages. It is a scourge found every where on earth—in cities highly civilized, as well as in the wigwams of the barbarous Indians—it spares neither age nor sex, neither the high nor the low, the rich nor the poor, but it gathers its victims from all classes and conditions of the community. Its insatiable tyranny is such that the number of its victims is enormous, and it attacks and carries from our midst with an almost exclusive choice, the fairest, and kindest, and loveliest, of young and old. O thou destroying angel! why dost thou thus smite down the brightest orbs of agonized humanity? How many homes have been darkened by the infernal subtlety of thy power? How many bright hopes blighted and destroyed? Yet, still the dark shadows are flinging themselves over vast numbers at the present time.

It is however very remarkable that in spite of all this devastation, very few indeed seek to understand its nature, its cause or causes, or the means by which we may be kept from its insidious grasp.

“With steps as noiseless as the summer air,
Who comes in beautiful decay? Her eyes
Dissolving with a feverish glow of light:

—————and on

Her cheek a rosy tint, as if the tip
Of beauty's finger faintly pressed it there:
Alas! *Consumption* is her name.”

What is Consumption? It is a disease synonymous with scrofula, depending upon blood which is produced with

diminished vitalizing elements—a very powerful form of blood disease—in which fluid the watery portion is greatly increased, there is also a diminution in size, shape, and quantity of the red corpuscles, but an increase in the amount of white albuminous corpuscles, probably due to defective digestion, consequently the blood is more plastic and albuminous.

Consumption we believe to be caused by depression of the brain, or some weakened condition of vital force. In attempting to describe this terrible disease we should say it is due to deficiency of vital force, under which condition blood is produced in the body, weak in all the elements of life,—insufficiency of phosphates, salts of lime, soda, iron, &c,—highly albuminous and defective in its organizable capacity. This is subject at any period, when under the influence of any exciting cause, when the circulation is excited or in any way irritated, to be let loose in the Lungs, Brain, Abdomen, etc., according to the predisposition, and once thrown out, its watery element is absorbed, and the more solid portions become clotted together, and form little round masses termed Tubercles.

Consumption may be hereditary: This is one of the great causes of the increase of this terrible disease in our midst. The incompatibility of temperament—the marriage of blood relations, or of persons of the same mental condition, colour, hair, eyes, and skin. Similarity of temperament in parents may produce a lower grade of life in the offspring, resulting in a strumous diathesis or scrofula. In marriage between blood relations or between persons of different races, the offspring produced, if any, will be of a lower grade than either of the co-mingling parents, in the latter case, the offspring will not essentially be hybrid. Where there is inconsistency in age, or wherever the age

of the paternal member of the family exceeds the maternal by fifteen years, the children are affected by glandular swellings, &c. The excessive eating, drinking, and the use of tobacco, alcohol, and deleterious drugs, diminishing the brain force of parents, they, the parents, will generate offspring, deficient in all the elements necessary for healthy life. Take for example the drunkard's children: the scrofula they suffer from is essentially of a brain type, and the drunkard takes his place as one of the chief destroyers of the health, happiness, and prosperity of the nation to which he unfortunately belongs.

Monotonous life, the sameness of locality, deficiency of sunlight, depressing impressions, and excessive mental or physical exertion will deteriorate the physical condition of the parents and, consequently, of the offspring. Uterine activity during pregnancy, or exercise of the depressing sensuous passions during that period will also render the child scrofulous. The depressing influences of town life, factory labour, syphilis, &c., created a lower grade of life. Independent of external exciting causes, the parents may have married when the disease in one or both of them may, comparatively speaking, be far advanced in its course. If so the offspring will be poor as regards vital force—stamina, and will die early. If the disposition of the parents to consumption be extreme, a condition of non-production or sterility will take place.

A Consumptive condition may furthermore be induced during early life. Difficult teething, worms, acidity of the stomach, diarrhoea, improper food, improper hygienic and dietetic management, as also menstruation during the period of lactation, all these act as so many causes that tend to lessen the vital force of a child, and thus create within it a scrofulous condition of the system—a lower

grade of mental and physical life. The speed with which mental and physical efforts are required to be performed in the present condition of society, saps the foundation of life—the continual hurry and bustle of business men, the amount of mental labour required of the lawyer, physician, and minister of religion, the continued exertion and worry in order to get in time for railway travelling, these with all other such things require a severity of toil and such a great expenditure of vital force as to be incompatible with a healthy life: that is the demand upon the system is greater than the supply, and consequently we have produced in the body a pre-disposition to scrofulous diseases, among others, and where the lungs are the organs of the body more prone to take on, as it were, disease, there we have Consumption.

Irritation of the procreative organs in either sex greatly tends to the production of a lower grade of brain life—here the irritation is directly passed to the Brain, and we have an immediate result—depreciation.

The immoral surroundings of our youth, the sensational tales and fables published and circulated throughout the world, bad feeding, and unsuitable situations, these all bring about a deteriorated condition of Brain life.

When this predisposition exists, it acts with great power by influencing any other forms of disease with which the individual may be attacked, and, furthermore, predisposes to corrupt conditions and makes them continue firmer and sometimes unmanageable.

Naturally the question arises: how can we know this condition of radical debility, this defective vital force? When the patient is of a cheerful temperament, the hair is dry, the skin extremely fair and thin, shewing the blue veins wandering beneath it, and presenting a particular

contrast between the red skin of a robust person and the white, comparatively speaking, bloodless condition, of the consumptive, eyes light blue or dark, characteristic of great delicacy and liveliness, with the muscles soft and flabby. If of a bilious temperament, the appearance is dull and sluggish, eyes grey or light brown—a disposition without inclination. Or if of both temperaments, a swelled or protuberant condition of the eye balls, skin thin and easily drawn from structures beneath.

The organs of digestion are weak, tongue coated red on its edges and tip; appetite defective, unnatural craving, bowels inactive, skin dry, blood thin and watery, action of heart and arteries weak and feeble; and in every part of the body there seems to be a deficiency of life.

It is possible that the predisposition to consumption may not be excited, so that individuals may pass on to a good old age and die without a discovery, the disease being latent, yet the predisposition may be transmitted to their offspring, where, when influenced by some lowering agent, depression of the the spirits or irritation of any kind, the disease may appear with all its vigour.

Cold, wet, or inhalation of dust with other irritants will also bring on a depressed state of the nervous system. There is also a quick pulse and as the diathesis gains ground, burning and tingling of the face, palms of the hand and soles of the feet, with flushes of heat, and other symptoms indicating a feverish state of the system will be observed—being more marked toward evening. Respiration is more frequent, the action of the heart is also increased, and all these abnormal actions tend to impair the vital forces. The local irritation in the lungs is aided by this general depression of the nervous system; although the general depression may exist without local irritation,

yet local irritation never exists without general depression in some degree.

Although this condition—consumption, we believe to be due to a deficiency of brain life or vital force—a condition in which the organic brain cell is defective, yet we know that the disease may be remedied by scientific treatment. It is believed by thousands of physicians that a part of the cause is some foreign matter or parasite inhaled into the edifice of the lungs or chest. Others consider that the pancreas is diseased, and that consumption is caused by an insufficiency in the amount of pancreatic juice necessary to digest the fatty matter of the food in the duodenum or first part of the small intestines. On this supposition the patient dies for want of fat in the system. The two latter theories are quite erroneous. And suppose we say that the cause of consumption is a parasite, why then did it not exist in all ages of the world and in all nations? A more learned class of professors have endeavoured to explain the first cause as being confined to the stomach. There can be no doubt that where food is detained in the stomach any length of time, there is weak digestion, and a peculiar decomposition takes place, called fermentation, acids are formed in the stomach, the action of which compounds is depressing to the Brain and nervous system, affecting the nourishing powers of the blood and making it feeble in all the elements of life. For this reason the body is defective in its substances.

The first cause however in all cases of disease is in the Brain and nervous system; exhaustion of the brain and deficiency of nervous influence over the stomach is the cause of the weakened condition of that organ. A deficiency of life in the fountain head—the brain—would be the cause of an insufficiency of the pancreatic juice. When

there is a lack of power in this organ all the other organs must suffer, for instance, when there is a lack or deficiency of nervous influence we have an impaired performance of the functions of the skin, indigestion, disease of the kidneys, torpid liver, etc. We believe the secret of the deficiency of brain life, is a want of nerve force, a diminished state of the tissue, and a lack of vitality in the nerve cell.

In proof of this position, what do we find in consumptive patients. Think now what the symptoms are, from the earliest period up to the termination of the disease. An early remarkable and very obstinate symptom is that of emaciation—loss of flesh. This generally takes place before there is any cough or discharge from the chest. Leanness is a very marked feature, due to a deficiency of nerve-force, indigestion and mal-assimilation. Where there is a want of Brain life or vital force, every part, yea every tissue of the body suffers from a deficiency of nervous influence, digestion is imperfectly performed, and consequently, the supply of nutritious matter to the blood becomes deficient, and, as the brain and nervous system derives its supply of food from the blood only, therefore we have a greater amount of exhaustion produced, exhaustion is added to exhaustion; hence the progress of disease.

There is a gradual loss of hair, prominent eye-balls, curved nails, and delicate skin, easily raised from the structure beneath, all brought about by the deficient assimilation or mal-nutrition. Another well known symptom of consumption is that the sufferer is subject to flashes of heat and cold, the result of nervous exhaustion. There is also a perpetual increase of animal heat, an increased velocity and irregular action of the heart and consequently of the pulse, while respiration becomes more rapid and some times laborious, all proofs of a lower vitality. This is in harmony

with the well known rule: the more frequent the respiration, the greater the velocity of the pulse, and the higher the animal temperature the lower the vital power. These symptoms may be accompanied with cough and expectoration, the cough is often, in the early stage, produced by depressed and irritated state of the nerves of the trachea or wind-pipe and pharynx. It is also due in part to foreign matter finding its way into the bronchial tube, the lungs in certain occupations become exposed to dust and other irritating kinds of matter, the inhalation of noxious vapour, or impure air arising from bad ventilation. The cough is an effort of nature to disperse this foreign substance. The cough is attended at the onset with an expectoration of colourless matter, of a spongy, mucous nature, and followed by a white or yellowish non-transparent matter, very much like what may be expelled from the chest during an ordinary cold. This state of things may last for some time, undergoing few or no changes; but as the disease advances, the expectoration consists of tuberculous matter, streaked with a dull yellowish colour. Floeculent like fragments are mixed with the sputa, and the expectoration is frequently streaked with blood, pus, etc.

The cause of this bloody expectoration is due to softening of the tubercular formations over an abraded part of the bronchial tubes, where probably a minute capillary blood vessel has been slightly ruptured by the shock during a coughing fit. Upon examining, or placing the ear at the top of the lungs, the sound which is audible is a dull one. The left lung is more liable to softening or to effusion of tubercular matter into its interior than the right, and it is estimated that the effused matter which is deposited at the top of the lung, whilst inflammation takes place at the

bottom. There is also a want of movement in the diseased part of the lung.

Consumption is always accompanied with hectic flush, which creeps on the suffering patient imperceptibly. Towards evening he feels chilly, and in the night his hands and feet feel hot and burning, then towards morning he perspires. Sometimes the perspiration is moderate, whilst at others the patient is drenched with it. Night sweats greatly indicate Brain exhaustion and consequent deficiency of nervous influence over the sweat glands. The patient is very often distressed by this symptom, inasmuch as it makes him dread to go to sleep. It also tends to the rapid exhaustion of his strength.

In the digestive organs there is a marked disturbance with much acidity of the stomach. The organs of assimilation—notably the glands which perform the process of absorption—are in a generally depressed condition, and do not receive the nutritive blastema in a proper manner. The patient has a dislike to both medicine and food, whilst the appetite is sometimes voracious. The urine is pale, limpid, and sometimes in considerable quantity. In all cases of consumption there are great quantities of substances, such as phosphates and chlorates detected in the urine, these favouring greatly the argument, that the disease arises from an essentially exhausted state of the nervous system—a state in which the body is not capable of utilizing in a proper and sufficient manner the various substances gathered from the food. This general depression causes the bowels to lose their equi-pose or equality in their action. At first they are very slightly affected, but during the last stage of this terrible disease, a very weakening diarrhœa sets in, which soon destroys the little strength that remains.

In the earliest stage of consumption and before ulceration takes place, the weak condition of the lungs can be discovered by the use of the galvanic battery. To detect the tender spot, the poles of this instrument are applied over various parts of the chest. Wherever the disease has commenced, the patient will complain of the part being tender and sore.

The emaciation in the last stage of consumption is so extreme that the patient appears to be a mere skeleton, his countenance is changed, cheek bones protuberant, eyes hollow and dull, the hair falls off, nails of a leaden hue, whilst dropsical swellings affect his legs and feet. Yet, to the end, the senses remain entire, and the mind is full of confidence and hopeful ideas. There is a peculiar cheerfulness of the mental faculties, indeed one of the most singular symptoms attending consumption is, that those labouring under it are seldom aware of danger, and it is no uncommon thing to meet with persons who are in the last stages flattering themselves with the idea of a speedy recovery, and forming projects based upon the most beguiling hopes :

“Then came Consumption with her languid moods,
Her soothing whispers, and her dreams that seek
To muse themselves in silent solitudes :
She came with hectic glow and wasted cheek,
And still the maiden pined more wan and weak,
Pale like the second blow : yet would she speak
The words of *hope*, even while she passed away,
Amid the closing clouds, and faded ray by ray.”

Prior to dissolution it is found that coldness of the extremities generally prevails, and the nervous system is shattered from the great amount of brain exhaustion.

The change which takes place in the lungs is very readily discovered when the tubercles are deposited in

them, and the changes that the phlegm undergoes. The passages of the throat and lungs are very easily implicated in the disease. The mucous membrane of the trachea or windpipe becomes ulcerated; scrofulous ulceration may also take place, at times producing hoarseness, &c. The disease generally affects that side of the throat corresponding with the diseased lung.

Unless the disease is arrested by appropriate treatment, the symptoms become worse, the breathing is short and quick, cough almost constant, chest very painful. The debility and emaciation are very much increased, the countenance more vivid, the eyes hollow, the feet and ankles swell, frequently aphthous condition of the mouth, diarrhoea becomes stubborn and unyielding.

In this last stage the sufferings of the patient are increased by excessive difficulty in breathing, bed sores, &c.

Death may be brought on in several ways, viz: from debility, sudden congestion of the lungs, pulmonary hemorrhage, peritonitis, brought on by ulceration of the bowels, or from collection of air in the pleural cavity.

Treatment.—Concordant with our theory of disease and the origin of consumption—the primary condition being one of brain exhaustion, the morbid condition of the blood and mal-nutrition being essentially an effect produced by the deficiency of nervous influence necessary for the normal action of the various functional processes, it is of importance that the means used to aid natural efforts, both in regaining a lost equilibrium, and in maintaining the same condition, be alike moral, sanitary, dietetic, and medicinal. Very few will doubt the efficacy of good moral surroundings in promoting a higher degree of intellectual or brain life. It is a point of great importance that a patient seeks and obtains peace with his God. How important it is that

quietude of mind be obtained by a simple trust in the Saviour; then having this joy and peace, through believing in the efficacy of the Blood of Christ, gives consolation. How many persons who are labouring under the greatest distresses in this world are upheld by the consoling thought that there exists a God who is love. Would anyone wish to deprive them of this hope? No man can go through life without seeing that such a hope is, during life's existence, conducive to virtue, and, above all, that it is highly consolatory, and that frequently when all other consolations fail. Sanitary or hygienic means are of invaluable service both in retaining a healthy condition of the body, and likewise as a means in restoring an exhausted state of body and mind. Late hours, fatigue caused by either mental or physical strain, should be avoided; as should also sexual excess and other excitements. Flannel should regularly be worn next the skin; the temperature of the apartments, bed rooms as well as sitting rooms, should be regulated so that equilibrium be kept up as regards temperature. Let there be a free circulation of air through all rooms, at all times, not that there should be a draught, but just so as to allow the vitiated and carbonized atmosphere to be renewed, and that freely, by a purer atmosphere.

The diet is of vast importance, and it is very necessary that the body be supplied with nutritious food, and such as can be digested with the least possible expenditure of force during the operation of digestion. Let the diet be such as the patient can relish. Of course it is impossible to mark out a dietary table suitable for every individual; yet I may suggest the following:

Morning—Milk with Compound Essence of Cocaine, and bread; or a little bacon-fat with an egg, lightly boiled,

(never eat fried eggs,) with tea, etc.; *or*, lightly boiled egg and bread and butter with tea or milk and Ess. Cocaine.

Dinner—Either Beef, Mutton, Poultry, broiled beef-steak, with bread, potatoes; oysters; egg puddings; beef-tea; chicken-broth; cooked fruit, with bread, etc.; vegetables, such as are easily digested. Compound Essence of Cocaine in sweetened water, as a drink. Avoid pork, veal, pastry, and alcoholic drinks.

Evening—Tea with bread and butter; milk and toasted bread; raw egg and milk; Compound Essence of Cocaine with light solid food; Beef-tea. Avoid Coffee.

The patient should, every morning, have a cold sponge bath (see baths, No 1) followed by brisk friction to the surface, using a coarse towel, rubbing and thoroughly drying the skin. After which a dose of Compound Essence of Cocaine in warm sweetened water may be given. If possible the patient should daily take plenty of gentle exercise in the open air. A medicated vapour bath occasionally.

The *medical treatment* should be general and special. General treatment directed to a restoration of the Brain and nervous system to a normal condition. Special treatment is necessary for the amelioration of symptoms as they arise.

The general treatment which we find of such inestimable value in restoring Brain power to a normal condition, improving the quality of the blood, and consequently removing that state of the nervous system which is the cause of the mal-nutrition of the body, is the following :

- (1). 'Brain Feeder' in doses of one to two teaspoonsful four times a day in decoction of Pleurisy Root.

(2). Or give the following mixture .

Rp.	Coca Leaf	...	...	...	...	...	...	$\frac{3}{4}$ ounce.
	Wild Cherry Bark, powdered	...	...	...	...	...	...	$\frac{1}{2}$ "
	Pleurisy Root,	do.	...	...	...	...	...	$\frac{1}{2}$ "
	Prickley Ash Bark,	do.	..	...	...	...	...	$\frac{1}{2}$ "
	Golden Seal	do.	...	...	...	...	...	$\frac{1}{4}$ "
	Solomon Seal,	do.	...	...	...	...	...	$\frac{1}{4}$ "

Boiling water $1\frac{1}{2}$ pint. Let them stand together for one hour; slightly press out the liquid, then strain.

Dose : Two tablespoonsful to be taken four times a day.

Where there is great emaciation and nervous debility, and where there is a strumous diathesis, then I recommend the following, which will supply to the body, in a soluble form ready for absorption, those elements of which it is deficient, and that in a quicker manner and with less expenditure of force, than they can be obtained from ordinary food.

Rp.	Syrup of Hypophosphite of Lime	
	"	" Soda
	"	" Iron, of each $2\frac{1}{2}$ ounces.
	'Brain Feeder' *	..... 4 ounces.
	Decoction of Comfrey Root,	a sufficient quantity to make 16 ounces of mixture

Dose : Three teaspoonsful three times a day.

If there be troublesome breathing, cough, or difficult expectoration, give from one teaspoonful to a desert spoonful of the Cherry Bark Cough Balsam two or three times a day. Or, the patient may take doses of the Pulmonary Syrup (appendix*) as occasion may require.

Should blood spitting, diarrhœa or looseness in the bowels occur, give in each dose of 'Brain Feeder,' or other mixture, half-a-teaspoonful or 30 drops of Tincture of Hamamelis Virginica. The patient should be kept quiet and at rest.

* Or Glycerine Extract of Coca Leaf 3 ounces.

Regulate the bowels by taking, at bed time, occasionally, one to three of the Chionanthus Liver Pills, or of the Aperient Pills (appendix*).

If severe pain in the chest be a prominent symptom, then apply to the chest flannel wrung out in a hot decoction of mugwort or yarrow.

Should there be swelling of the feet and legs, put the feet in warm mustard and water.

If the patient be troubled with night sweats, then let the following be used at night just before retiring to bed; it may either supplant or be used in conjunction with the morning sponge bath :

Rp Oak Bark, bruised, 4 ounces.
 Water 2 gallons.

Boil down to one gallon, and when cold add three table spoonsful of Compound Essence of Cocaine. Bottle for use.

Directions:—To one pint of this mixture add one pint of cold or tepid water, sponge the body down, and dry well with a coarse towel.

An irritating plaster worn on the chest will be found invaluable.

Under this treatment, which is essentially constructive, the nutrition is rapid and is quickly manifested by an improvement of vital force. And by its aid thousands of Consumptive patients have been restored to health and vigour.

INFLAMMATIONS.

Inflammation is a process into which many morbid changes enter—changes in nervous force and influence—changes in condition of the blood vessels—changes in the condition of the blood—and changes in the nutrition of

* Or Glycerine Extract of Coca Leaf 3 ounces.

the part. The symptoms generally characteristic of inflammation are:—varying degrees of pain, swelling, heat, and redness, a tendency to the effusion of *serum*, from the blood vessels, which speedily assumes the form of coagulated lymph or pus.

Theory of Inflammation: In inflammation there is a series of progressive changes of organic structure; two conditions are necessary for the production of this, as all other diseases viz., a predisposition to the disease in an organ, and, second, an exciting cause. The predisposed organ is attacked by some exciting cause, and the first thing which takes place is to telegraph, as it were, to the brain for more force with which to combat the foe, a reply is immediately sent with more force, and a quickened movement of the blood in the minute capillaries takes place, owing to the greater influence of the brain and nervous system whereby the capillaries become contracted; this continues until either the nervous force has overcome the exciting cause and an equilibrium regained, or until the power of the nerve is overcome or suspended. Then a second process commences, the contraction of the muscles being superceded by a state of relaxation—and an opposite or dilated condition of the capillaries is observed—the blood is retarded, and in some it stops entirely, owing to the removal of the nervous influence whereby the contractibility of the coats of the capillaries is entirely destroyed for the time, whereas all round the part the blood is quickly circulating in tortuous and distended vessels, and still further off it moves quickly, but through less distended vessels. And as a consequence of this diminished nervous influence and stagnant state of the blood in the affected part, decomposition of the blood takes place and, as a further consequence, the nutrition of the part is

retarded, and, if a reaction does not take place, decomposition of the tissues of the organ commences, purulent matter is formed, or, in other cases, actual mortification or death of the part may result.

COLDS—INFLUENZA.

The old saying that "Colds are the foundation of all other diseases" is true to a large extent. Dr. G. Gregory, says "Cold is the most important of all the existing causes of internal inflammation. There is scarcely any form of it which does not occasionally owe its origin to cold; and many inflammatory affections . . . have no other cause of the smallest practical importance."

A cold is a form of disease which is generally treated lightly, indeed with much too little gravity. It is frequently allowed to proceed unchecked until it takes such firm hold of the attacked individual as to become a serious affection and the precursor of other and more grave diseases, and this it does simply because it is an effect, which, if its progress is not prevented soon resolves itself into actual inflammation—either general or local.

SYMPTOMS. A cold commences with aching of the limbs, then we have, as an accompaniment, weight and pain in the head, oppression of the chest and slight difficulty of breathing; a sense of fulness and stopping, or continual running of the nose; watery and inflamed eyes; soreness of the throat; cough; cold shiverings succeeded by flushes of heat. When the symptoms are very severe with greatly increased flow of secretion from the nose and lungs, hoarseness and soreness of the throat and lungs, we then term the complaint *Influenza*.

CAUSES. The chief causes are obstructed perspiration caused by the application of cold to the body, such as that

occasioned by sudden departure from an over heated room into a cold atmosphere; sitting on the ground, damp, etc. In either case the exposure to the exciting cause gives an individual a cold by the action on the nervous system. The impression made on the extremities of the sentient nerves of the skin is conveyed to the nerve centres, and these so influence the nerves which govern the walls of the blood-vessels that the would be intruder is warded off so long as the local force is able to withstand the external force. If the external force is the greater, then, the blood-vessels of the skin are partially paralysed and we have set up a condition of congestion—the blood circulates only very imperfectly in the skin, and hence the deeper seated blood vessels are overloaded and distended—which condition, if active remedial means are not used, soon progresses to actual inflammation.

TREATMENT. When there is reason to suspect an attack of cold, the first thing that should be done is to take one teaspoonful of the Compound Essence of Cocaine in half-a-tumbler-glass of hot sweetened water, and two or three Chionanthus Virginica Liver Pills. Then have a vapour bath, or, if this is inconvenient, put the feet into water, as hot as can comfortably be borne, in which is mixed one tablespoonful of ground ginger and one tablespoonful of mustard; this will tend to equalize the circulation of the blood. Now go to bed and drink of the following mixture:

Rp.	Pennyroyal Herb	...	1 oz.
	Boiling water	...	1 pint.
Let it stand 20 minutes; strain, then add			
	Essence of Cocaine	...	1 tablespoonful.
	Brain Feeder	...	1 tablespoonful.

Sweeten with treacle. **DOSE.**—Two tablespoonsful every half hour.

Continue the administration until free perspiration is

induced, which keep up for several hours. As a general medicine let the patient take doses of the Brain Feeder, repeated three or four times a day; the Compound Essence of Cocaine in milk as a diet drink.

Sponge the body well each morning with the mixture stated on page 224 of this book, after which rub the body with a rough towel.

Regulate the bowels with the Chionanthus Liver Pills. If there is much cough take occasional doses of the Cherry Bark Cough Balsam.

Let me here say, that, to ministers and others who are compelled to speak in over-heated rooms, and then enter into an atmosphere which is cold and damp, the Compound Essence of Cocaine is an invaluable preventative against colds, sore throats, &c., when taken on lump sugar. The lump of sugar is soaked with the Essence and put into the mouth just before leaving the room. Many have proved it.

If the patient is under seven years of age, then the treatment should consist of alternate doses of the Child's Restorer and Cherry Bark Cough Balsam in the infusion of Pennyroyal. The occasional use of hot water baths to promote perspiration. The bowels to be regulated by occasional doses of the aperient mixture (appendix).

2.—Those who prefer to make up their own medicines may, with great advantage, pursue the general course laid down as above. The medicine should consist of repeated doses of the following mixture :

Rp.	Yarrow	..	...	...	...	...	$\frac{3}{4}$ ounce.
	Pleurisy Root, bruised	...	...	...	...	...	$\frac{3}{4}$..

Boil in one and a half pint of water for ten minutes; remove from the fire and pour the boiling liquid on to the following :

	Coca Leaf	...	...	...	...	...	$\frac{1}{2}$ ounce.
	Composition Powder*	...	...	...	...	...	$\frac{1}{4}$..

* For Composition Powder, see appendix.

Let them stand for half an hour, strain, and sweeten with 4 ounces of treacle. DOSE : Two tablespoonsfuls every half an hour until perspiration is thoroughly induced. The dose may then be given every three hours.

Regulate the bowels with occasional doses of the aperient mixture (appendix).

INFLAMMATION OF THE LUNGS, BRONCHITIS,
AND PLEURISY.

These three diseases are so nearly allied that we shall treat of them collectively.

In inflammation of the lungs, or pneumonia, the cellular tissue or substance of one or both of the lungs is inflamed ; in bronchitis the inflammation is seated in the bronchial tubes or air passages ; and in pleurisy the lining membrane which covers the lungs, called the pleura, is the seat of inflammation.

SYMPTOMS. These diseases generally set in with a chill or shivering fit, followed by an intense feeling of heat ; there is afterwards, tightness of the chest ; lassitude ; pain in the limbs ; thirst ; hot and dry skin ; tongue furred, white ; little or no appetite ; bowels usually confined ; urine, thick and scanty. The following are the distinctive symptoms of these diseases :

Inflammation of the Lungs.—The patient generally lies on his back, has a frequent, harsh, and grating cough ; rapid and difficult breathing,—during the height of the disease the respirations may reach 40 per minute ; the cough is attended with a *scanty, tenaceous, rusty-coloured, or bloody expectoration*, which is got up with difficulty ; pulse, quick and soft ; occasionally there is delirium at night, and a dull pain is felt on inspiration.

Bronchitis.—The patient complains more or less of fever, a dull oppressive pain, or soreness of the chest. The cough

is loose, deep, and diffused ; expectoration copious, at first glairy, or frothy, and almost transparent, but afterwards it is opaque.

Pleurisy.—An attack of this disease manifests itself by the appearance of sharp pains in the side, *increased by breathing or coughing* ; the patient generally lies on the unaffected side ; cough, hard, dry, and short, but *no* rusty-coloured expectoration ; pulse, quick and often hard.

CAUSES.—The exciting causes of these inflammatory affections may be stated as being generally one or more of the following : Sudden transition from heat to cold, or anything that obstructs the free circulation of the blood in the skin, such as sleeping in damp places, wet clothes, undue heat, violent exercise, local congestion, blows, an altered condition of the blood, &c. The developement of one of the forms more than another—of inflammation of the lung substance, of the bronchial tubes, or of the Pleura—depends solely upon the predisposition of the individual attacked.

TREATMENT. When the disease occurs in a mild form in adults, then bathe the feet well in hot mustard and water for fifteen or twenty minutes, dry them well ; and afterwards keep them well warmed by a fire, or, if necessary, let the patient go to bed, put to the feet a bottle of hot water, around which is wrapped a wet vinegar cloth ; during the foot-bath, give the patient a strong dose of the Compound Essence of Cocaine. When in bed give the patient doses of the following :

Rp. Pleurisy Root, bruised ... 1 ounce

Boil in one and a half pint of soft water for 15 minutes. Strain, sweeten slightly, and then add two tablespoonsful of Brain Feeder and one tablespoonful of Compound Essence of Cocaine.

DOSE : Two tablespoonsful every hour until the patient

is somewhat easier ; then give the doses at intervals of two or three hours. Each dose should be given warm.

If the cough is troublesome, give, every three hours, a dose of the Cherry Bark Cough Balsam, in a little of the above mixture, warm. Regulate the bowels with the Chionanthus Liver Pills.

If the patient is an infant—that is under 7 years of age—then the treatment may be as follows : Let the feet be occasionally bathed in warm water in which has been thrown a little soda. Keep the bowels regular by the administration, now and then, of doses of the aperient mixture (appendix).

Give the following medicine : Take of Pleurisy Root, bruised, half an ounce ; boil in three-quarters of a pint of water for ten minutes ; pour the boiling liquid on to half an ounce of Pennyroyal Herb, let it stand for ten or fifteen minutes, strain, and add a small quantity of sugar.

DOSE : One to two teaspoonsful everyhour or two, according to age and the severity of the complaint. Give a dose (size according to age) of the Cherry Bark Cough Balsam in a little of the above infusion, warm, every three or four hours. Apply warmth to the body. If the above treatment is carried out there is no doubt the little sufferer will be speedily brought round.

If the case is severe an emetic powder, (appendix) may be given, the patient drinking freely of the Compound Essence of Cocaine before and during its action. The inhalation of the vapour of vinegar ; or of the steam from a hot infusion of herbs. The application of a poultice to the chest, (appendix) is also valuable. Be sure that the bowels are not allowed to become costive.

2.—Or, following the above general course, the medicinal treatment may consist of the administration of repeated

doses of the following mixture :

Rp. Liquorice Root, bruised ... 1 ounce
 Pleurisy Root, bruised... ... 1 „

Boil in one and a half pint of water for ten minutes ; while still hot pour on to the following :

 Coca Leaf $\frac{1}{2}$ ounce
 Boneset $\frac{1}{2}$ ounce
 Composition Powder $\frac{1}{2}$ a teaspoonful

Let them stand 15 or 20 minutes ; strain.

DOSE : One teaspoonful to two tablespoonsful every one or two hours, according to the age of the patient and severity of the disease.

Regulate the bowels by the use of the aperient mixture. In the first instance use all reasonable means to induce perspiration.

If the patient is an infant, omit the Composition Powder in the above recipe. Under all circumstances the diet should be of a light and nourishing character, consisting chiefly of mucilaginous drinks, as barley-water, &c., &c. Milk and a little of the Compound Essence of Cocaine is very valuable as a diet drink in inflammatory diseases.

ASTHMA.

This is a chronic spasmodic affection of the air passages of the lungs, which comes on by paroxysms, usually at night, accompanied by difficult and short respiration, wheezing, tightness across the chest, cough, etc.

SYMPTOMS. There is great tightness of the chest, and intense difficulty of breathing, with a loud wheezing noise and dry cough ; the patient lays hold of anything near him so that all the muscles of inspiration may be brought into action ; face pallid ; perspiration rolls down the brow ; pulse, small and weak ; and the patient in the paroxysm, appears to be on the verge of suffocation.

CAUSES. This affection is decidedly nervous in its origin, dependent upon muscular contraction of the fibres of the bronchial tubes; the seat of the irritation may be in the pulmonary nerves, or in the medulla oblongata, or it may be due to irritation of the gastric portion of the pneumogastric nerve. The exciting causes may be stated to be, sudden changes of temperature; disorders of the digestive organs; certain effluvia; long continued nervous depression; gout, etc.

TREATMENT. The sponge bath should be daily used. Give alternate doses of the Brain Feeder and Cherry Bark Cough Balsam in one tablespoonful of the following mixture: Plenisy Root, one ounce; boil in one and a half pint of water, ten minutes, pour on to three quarters of an ounce of Black Cohosh Powder, let them stand twenty minutes, strain, and bottle for use. An emetic powder may be given once a week, before and during its action drinking freely of the Compound Essence of Cocaine in warm sweetened water.

2.—Let the above general directions be minutely followed out, and then, with the administration of the following mixture, a cure will be speedily obtained.

Rp.	Coca Leaf	...	...	$\frac{1}{2}$ ounce.
	Lobelia Powder	..		$\frac{1}{2}$ dram.
	Black Cohosh Powder			$\frac{1}{2}$ ounce.
	Composition Powder			1 teaspoonful.

Pour on the above one pint of boiling water, let them stand for twenty minutes, strain, add a little sugar, and bottle for use.

DOSE.—Two tablespoonsful to be taken three times a day. Keep the bowels in a regular condition. Let the feet be kept perfectly dry, and avoid exposure to cold.

COUGHS.

Coughs are generally the result of improperly treated

or neglected colds ; when they do occur they should never be slighted, but promptly and effectually met and removed, if allowed to continue, a cough may become a serious precursor of that terrible disease—Consumption. Common Cough is the one we shall treat of here, others, such as whooping, and consumptive coughs will be considered in their respective places.

TREATMENT. Give a vapour bath twice a week ; apply hot bottles to the feet ; use all means to promote and equalize the circulation of the blood. And, as the cough is the result of deficiency of nerve force, all means, medicinally, must be used to raise the vital power of the patient. Give a dose of the Brain Feeder twice a day ; and likewise a dose of the Cherry Bark Balsam twice a day in decoction of Yarrow and Pleurisy Root ; keep the temperature of the room as equable as possible. Let the patient have a sponge bath every morning on rising from bed. The patient should drink freely of the Compound Essence of Cocaine, and take two or three of the Chionanthus Liver Pills daily.

If the patient be under twelve years of age give, as a medicine, doses of the Child's Restorer in marjoram tea, and the Cherry Bark Balsam twice a day. He should have warm baths on going to bed ; and in the morning cold sponge baths.

2.—Or the treatment (medicinal) of a common cough may consist of the following :

Rp. Pleurisy Root bruised ... 1 ounce.

 Licorice Root bruised ... $\frac{3}{4}$ „

Boil in one and a half pint of water for five minutes, then add

 Slippery Elm bark ... 1 ounce.

Boil again for ten minutes, then strain the boiling liquid on to the following ingredients :

Coca Leaf	½ ounce.
Lobelia Herb powder ...	½ teaspoonful.
Composition powder ...	½ teaspoonful.

Let them stand 15 or 20 minutes, strain, bottle.

DOSE:—For a child, one to two teaspoonsful according to age; for an adult, one to two tablespoonsful to be taken every two, three, or four hours, according to the severity of the complaint.

Perseverance with the above medicine, together with careful attention to the general directions laid down will, in all cases, speedily result in the desired end—the cure.

HOOPING COUGH.

This is a contagious and infectious disease, characterized by a peculiar cough—termed a hoop—occurring in fits, usually terminated by vomiting. It is caused primarily by the action of a specific poison on the system of nerves presiding over the functions of respiration. It is a disease of childhood and most frequently occurs between the ages of four months and six years.

SYMPTOMS. The patient is usually attacked with fits of violent, rapid, interrupted coughing, alternating with long drawn, shrill, crowing inspirations; the seizure usually ending with the expectoration of a thick, glairy mucus, or in actual vomiting. During the fits the features become red, or bluish, the eyes start, and the child appears to be threatened with instant suffocation.

It is a disease which generally runs a certain course, and rarely attacks the same person twice; it may coexist with other diseases, such as small-pox, measles, etc., but it also sometimes disappears on the appearance of an eruptive disease.

TREATMENT. Many cases of hooping cough are so mild as to need no other treatment than hygienic care, and a

proper regard to the temperature of the room the child occupies in the cold seasons of the year. In children over three years of age the disease is usually slight and regular. The following medicine is excellent in all cases of whooping cough;

Rp Pleurisy Root, bruised ... $\frac{1}{4}$ ounce.

Boil in half a pint of water for ten minutes, pour the boiling liquid on to Black Cohosh powder ... $\frac{1}{4}$ ounce.

Let it stand until cold, strain, and add two tablespoonsful of the Cherry Bark Cough Balsam; mix well.

DOSE:—Half a teaspoonful to two teaspoonsful to be taken every two or three hours. The quantity regulated according to age.

A strong tea of red clover heads and leaves is a good thing in severe cases of whooping cough.

Where the little patient is emaciated, friction over the whole surface of the body with *warm* olive oil will be found to aid in the support of the body.

In winter the child should be kept in an equable temperature, but with free ventilation; its diet, milk and bread, raw eggs, ripe fruit; no sugar if the patient has been weaned; if it is still at the breast the mother must live on good nourishing diet. Olive oil will be found an excellent aperient for children suffering from this disease.

2.—Or, following the general directions, give the patient doses of the following mixture :

Rp. Coca Leaf $\frac{1}{4}$ ounce.

 Clover Leaf and Heads 2 „

 Black Cohosh Powder $\frac{1}{4}$ „

Pour on to these ingredients half a pint of boiling soft water, let them stand for twenty minutes, strain, add a little sugar if necessary

DOSE:—One to three teaspoonsful, according to age, to be taken every three hours.

CROUP.

This disease is confined to childhood. It is one of the

most alarming diseases to which children are subject, being sudden in its attack, and rapid in its results.

CAUSES. The application of cold is an exciting cause, and, as a consequence, it occurs more frequently during the winter months; damp, changeable atmosphere; insufficient clothing; epidemic miasma.

SYMPTOMS. It is ushered in, usually at night, by a loud ringing and hoarseness of the voice, sometimes a rattling in the throat during sleep is heard. Afterward the breathing becomes rapid and difficult, and the voice husky or absent, and the breath as if passing through a narrow tube, and in speaking or coughing it acquires a shrill and peculiar sound, similar to the crowing of the cock. Quick pulse, thirst, hot and dry skin. The cough is dry, but after a time a viscid matter is brought up, and in some cases flakes or tubes of false membrane, with efforts often so distressing as to threaten suffocation. The inflammation is peculiar, as depending on plasticity of the blood. The difficulty of breathing arises from the formation of a false membrane in the larynx, or from spasm.

TREATMENT. 1.—Promptness and decision are always necessary to successfully treat this disease, delay or inattention may result in a fatal termination. When the symptoms commence, give, as soon as possible, doses of the following mixture:

Rp. Blood Root, in powder $\frac{1}{4}$ ounce.

Pour on this half a pint of boiling water, let it stand for ten minutes, strain, and add two teaspoonsful of Compound Essence of Cocaine. Keep it warm. Let the patient drink one or two teaspoonsful every twenty minutes.

Apply, externally, to the throat a flannel wrung out of the following mixture: hot Vinegar 4 ounces, Compound Essence of Cocaine one tablespoonful, mix, keep it warm;

change the flannels every five or eight minutes. Continue this treatment until the urgent symptoms are somewhat abated, the medicine may then be given at longer intervals. If the disease is very severe give an emetic powder (appendix). Let the patient drink freely of the Compound Essence of Cocaine in warm sweetened water.

2.—Or, let the following treatment be carried out.

Rp. Lobelia and Blood Root, in powder, of each 1 teaspoonful.
Composition Powder ... half a teaspoonful.

Pour on the above half a pint of boiling water, let them stand for ten or fifteen minutes, strain, slightly sweeten, keep warm.

DOSE:—One to three teaspoonsful every twenty minutes until the more urgent symptoms are abated.

Prepare the following mixture and apply externally: Cayenne Pepper, one teaspoonful, boiling Vinegar, half a pint, salt, a tablespoonful, mix; keep warm, and apply cloths wrung out of it to the throat.

Foot baths are useful. The patient may drink infusion of Coea Leaf with advantage.

DIPHTHERIA.

This is a contagious and infectious disease, the malignancy and putrescency of which is chiefly spent on the throat.

CAUSES. A poison, probably specific, either generated in the body, or external to it; it affects young persons and adults, but chiefly young children. Persons suffering from debility are predisposed to it. The poison acts primarily on the nervous system, as is shown by the vital depression, loss of power, and secondarily on the blood.

SYMPTOMS. It generally commences with a little stiffness of the neck, soreness of the throat, and slight difficulty in swallowing; sometimes there is chilliness, nausea, diarrhoea, and general weakness; hot and dry skin, loss

of appetite, quick and small pulse, sometimes great foetor of breath. On examining the back of the month and throat it is of a dark red or claret colour, and sooner or later (in from 12 to 48 hours from commencement of disease) a smooth, tough, thick greyish white layer of lymph, resembling wetted washleather, is formed in patches over the inflamed parts, which when peeled off is soon renewed. It usually runs a definite course.

TREATMENT. 1.—In the early stage give an emetic powder. The medicine must afterwards consist of equal parts of Brain Feeder and Essence of Cocaine in teaspoonful doses every hour. The application, externally, of the mixture recommended under the head of Croup is excellent. Inhalation of the steam from hot vinegar is valuable. If there is putrescency give yeast and milk. Keep the bowels open by the exhibition of enemata of beef-tea and olive oil. Give a vapour bath. General sponging with vinegar and water every four hours. If there should be suppression of urine give parsley tea and Compound Essence of Cocaine. Let the diet consist of milk and Essence of Cocaine, beef-tea, raw eggs, cream, &c. Should the disease resist these remedies give five or ten grains of Chlorate of Potash every three hours. Poultice of bread and mustard. Feet and legs in hot water and mustard.

2.—Or, follow the general principles and administer the following medicine every half an hour until relieved: Bayberry Bark Powder, Lobelia, and Blood Root, each one teaspoonful; Coca Leaf half an ounce; Cayenne, half a teaspoonful; boiling water threequarters of a pint, let stand 20 minutes, then strain. **DOSE:** One teaspoonful to one tablespoonful.

INDIGESTION.

Indigestion, or dyspepsia, is a disease produced by de-

rangement of the digestive functions. The function of digestion is in its nature complex, depending upon a proper influence of the brain and nervous system for the harmonious action of the various organs constituting the digestive apparatus, all of which organs are mutually dependent upon each other's action. These organs, singly, are liable to be disturbed by many different exciting causes, which may each be again modified in their action by a multitude of secondary and adventitious causes or circumstances ; and as every separate organ must perform its part healthily to complete the general function, so also the disorders of each individual organ may induce various derangements in the action of the whole apparatus.

CAUSES : This disease is more common in cold than warm weather, and also in moist weather, whether warm or cold. A predisposition to this disease may be hereditary or acquired by certain habits and manners of living, as by want of exercise, by indolence of body, indolence as well as excess of mental application ; by effeminate habits and enervating excesses, by dwelling in close, ill-ventilated apartments, over indulgence in sleep. The habits of certain professions and trades contributes considerably to the excitation of this disease. Excessive suckling ; seminal weaknesses ; the habitual use of narcoties, as tobacco, opium, &c., which destroy the sensibility of the nervous system ; habitual use of alcoholic drinks ; excess in eating or drinking ; irregularity in the times of taking food ; in fact, any thing that exhausts the system tends to induce a predisposition to this disease, which frequently requires but slight exciting causes to induce actual manifestation of its distressing symptoms. Amongst the exciting causes may be mentioned an unusual disproportion or want of due relation between the powers of the digestive organs and the amount of food

crammed into the stomach, neglected state of the bowels, intense application to study or exercise after a meal. Sudden excitement of the emotions, as fits of passion, great joy, sorrow, etc. Indigestible foods, sweets, pastry, eating hastily; check to perspiration, by application of cold and moist atmosphere, &c., &c. The process by which these exciting causes induce the disease termed indigestion may be easily traced: some causes act by diminishing the natural sensibility of the stomach—by deadening the nerves—directly by the use of narcotics, as opium, tobacco, alcoholic drinks; intense thought and application, by withdrawing the nervous energy from the stomach to the brain; or by sedentariness and repletion (or over filling of the stomach with food) the healthy equilibrium of waste and supply is destroyed, for by virtue of the consent of every part of the living body, all the functions of assimilation can only be preserved in health so long as the stomach digests well, but if the stomach is overcrowded with food the pressure on the nerves will be so great as to almost entirely prevent the flow of nervous energy, the pressure will, as it were, break the continuity in the nerve structure, thus the force is insufficient to carry on aright the process of digestion; on the other hand the stomach can only digest well so long as the different functions which convey and deposit the nutritious matter in the various tissues are healthily performed, which, however, cannot be the case when from indolence, &c., there is both a deficient consumption of this nutritious matter and a defective elimination of the effete and worn out particles. The consequence is that the power of the brain and nervous system diminishes, the whole process of nutrition languishes, and the stomach losing its natural tone, becomes inactive.

SYMPTOMS. Vitiated appetite. Nausea and vomiting

are very common and troublesome symptoms in dyspepsia. These may occur at various intervals after taking of food ; vomiting may occur without previous nausea, in other cases, nausea may exist incessantly without vomiting. Sometimes there is great retching and vomiting of mucus, and afterwards of yellow bile. Flatulence with eructation is another and most unpleasant consequence of impaired digestion, produced by the evolution of gases generated by fermentation of food, this symptom frequently presents itself when the stomach is empty, owing to delay in the partaking of a meal beyond the accustomed hour. The eructations may be so offensive as to suggest the idea to the individual of rotten eggs, from the amount of sulphuretted hydrogen evolved. The eructations may also be very acid, due to the generation of acetic acid by fermentation. Pain in or about the stomach is a common, though not constant, symptom of indigestion ; it may come on in paroxysms, as cramp in the stomach ; or there may be heartburn, a rather painful sense of heat in the region of the stomach. Sometimes there is pain in the stomach immediately after taking food, which continues until vomiting, which generally ensues, occurs. A very frequent symptom is pain coming on twenty or thirty minutes after a meal, the pain is of a dull aching character, frequently extending from the region of the stomach to between the shoulders ; the appetite is generally good, tongue clean and red at edges ; this uneasiness generally proceeds from the food being delayed in the stomach, owing to deficient supply of nervous energy. Or the pain may commence two or three hours after a meal, continuing for several hours. Water brash is another troublesome concomitant, as is also constipation, &c., &c. There is generally, greater or less, a loss of vigour both of body and mind, the body wasting, the muscles flabby, and the brain

losing its natural food, the mind as well as the body becomes impaired : there is excess of excitability, and, consequently, irritability of temper, restlessness, despondency, &c., headache, tongue generally coated, bowels irregular, and owing to general exhaustion the pulse is often irregular, with frequent palpitation of the heart, and sometimes pain in the left side of the chest, giving rise to great apprehension, on the part of the patient, that the heart is organically diseased.

TREATMENT. In the treatment of indigestion the first object must be to obviate, if possible, the circumstances which excited the disturbance of the digestive functions ; and secondarily, to assist nature in recovering an equilibrium of action. Give the stomach as much rest as possible, by not putting too much into it at a meal, and when that food is digested let the stomach have rest before giving it more work. Persons who take a hearty, though moderate, meal should allow an interval of five hours for digestion and rest before having more food ; but feeble persons who have partaken of a meal of light and easy soluble food should not allow an interval of more than three and a half or four hours between meals. A variety of articles of food and drink is very injurious. It is next to impossible to lay down absolute directions for the diet of persons ; some persons are made exceedingly ill by articles of food, which, for the generality of persons, are perfectly wholesome. Sufferers from indigestion should generally abstain from butchers' meat. The diet should consist of a little white meat—such as chicken or white-fleshed fish—and farinaceous articles with milk, or milk and lime water, raw eggs are also valuable. Bread (bran bread) is, of all articles, the best for invalids and others, it contains within its substance all the elements required for healthy nutrition — non-nitrogenized, nitro-

genized, and phosphatic substances, it is, in fact, *the normal* solid nourishment in proper proportions for nutrition, and is by far the best food that can be used by persons possessing weak digestive powers. If animal food is taken it should consist of well roasted or boiled flesh, fowl, or fish. If vegetables—as potatoes, greens, &c.—produce fermentation, causing acidity and flatulence, they should be taken with great moderation by dyspeptic individuals. Pickled meats, ham, &c., should be shunned. The use of wine, beer, or spirits should be abstained from. The Compound Essence of Cocaine will be found to supply their place admirably. Too much tea or coffee is also injurious. As a drink, milk and lime water in variable proportions according to the case, with Compound Essence of Cocaine will be found not only nutritious but very soothing to an irritable stomach. Moderate exercise in the open air is not only beneficial but absolutely necessary.

Not only is great care necessary in dietetic remedies, but proper medicines are also required. The patient should regularly—every day—have a cold sponge down (water, salt, and Compound Essence Cocaine) after which dry friction. A vapour bath occasionally—say once a week—will be found beneficial. As a medicine take doses of Brain Feeder three times a day, and one or two Chionanthus Liver Pills three times a day. If these directions are followed out, the most obstinate case will yield. If there is acidity give one tablespoonful of the neutralizing mixture (appendix), with the dose of Brain Feeder. As a diet drink nothing can be better or more suitable for dyspeptics than the mixture of milk, lime water, and Compound Essence of Cocaine.

If there be much pain in the stomach, apply a poultice of equal parts of mustard and ginger.

2,—If the bowels are confined give the patient Powdered Rhubarb in doses of from three to ten or fifteen grains (a quarter of a teaspoonful, more, or less according to conditions), or sufficient to evacuate the bowels once at least, daily. Let the dose be proportioned so that it may be repeated three times a day. Should acidity of the stomach be present give occasional doses of the neutralizing mixture (appendix). Flatulency is frequently an annoying symptom, and may be removed by the use of Essence Peppermint or Tincture of Assafoetida in doses of half a teaspoonful in a small quantity of sweetened water.

If there should be any cough which proves troublesome give doses of the following mixture: Wild Cherry Bark in coarse powder one ounce, Ipccacuanha, in powder, half a teaspoonful, boiling water one pint; put them into a vessel and keep perfectly closed for one hour, strain; sweeten a little. DOSE:—one tablespoonful three times a day.

Let the general medicine consist of the following:

Rp. Golden Seal Root... .. $\frac{3}{4}$ ounce.

Boil in a pint and a half of water for fifteen minutes, then while still hot, pour on to the following ingredients

Coca Leaf $\frac{3}{4}$ ounce.

Wild Cherry Bark in coarse powder $\frac{3}{4}$ „

Composition Powder One Teaspoonful.

Let them stand for half an hour, strain, bottle.

DOSE:—Two tablespoonsful to be taken three times a day. If powders are objectionable to the patient, then give him one or two Aperient Pills (appendix) three times a day

In an attempt to successfully treat a case of Indigestion, it is of the greatest importance that the patient lay aside all habits which may have tended to induce the disease. Let me impress upon all dyspeptics to live temperately. Excess in either eating, drinking, sleeping, exercise, etc., must be left off and abandoned, in fact the patient must

deny himself the various indulgencies which he has been wont to have. Sydney Smith gives the following comical description of a dyspeptic :—"my friend sups late; he eats some strong soup, then a lobster, then some tart, and he dilutes these esculent varieties with wine. The next day I call upon him. He is going to sell his house in London and retire into the country. He is alarmed for his eldest daughter's health. His expenses are hourly increasing, and nothing but a timely retreat can save him from ruin. *All this is the lobster.* And when over-excited nature has had time to manage this testaceous encumbrance, the daughter recovers, the finances are in good order, and every rural idea excluded from the mind."

INFLAMMATION OF THE STOMACH.

Inflammation of the stomach exists in various degrees of intensity from the most acute, to the slightest sub-acute, it may also become chronic. It may be known by a severe burning pain over the region of this organ which is increased by pressure, there is also frequent retching and vomiting. The heat over the surface of the stomach is something considerable, while the extremities are cold. The patient may also complain of sore throat. The breathing is anxious and quick; the patient is restless. It is accompanied with constipation of the bowels, depression of spirits, and other symptoms indicative of an exhausted nervous system.

CAUSES. The causes are frequently very obscure. It may be produced or excited by indigestible food in a system rendered susceptible of such irritation by protracted mental anxiety or labour. In children, inflammation may be set up by the irritation produced by teething, and probably also by improper articles of diet, given through carelessness or ignorance, and possibly by substances actually poisonous. Swallowing of hot liquids, too great indulgence in the use of

ardent spirits, &c. Exposure to cold and damp is a frequent cause of it.

TREATMENT.—1. Every source of irritation must be removed whether it be food, drink, or medicine. If the bowels are costive and the stomach rejects the Chionanthus Liver Pills, give a dose of Castor Oil. Apply a poultice over the stomach, or else use the hot fomentation with decoction of yarrow and hops. As a medicine give the following, decoction of Slippery Elm Bark, half a pint; Mint Tea, half a pint; Brain Feeder, three tablepoonsful; Bicarbonate of Potash, half a teaspoonful.—Dose: A tablepoonsful every 30 minutes; as a drink give either toast-water or barley-water and Compound Essence of Cocaine. Warm baths to the feet, and hot fomentations are of great value. When nourishment can be taken let it consist of arrow-root, or entire-wheat flour gruel, in small quantities as the stomach can bear it. Should the patient be a child, give it hot baths, fomentations of yarrow and hops, and apply poultices of onions, oatmeal, and a little vinegar. Child's Restorer in the mint tea, as above, every twenty minutes. Milk may be given in all cases where it agrees.

Where this disease assumes a chronic form let great care be exercised in diet, whatever is eaten let it be well chewed; take gentle exercise; frequent doses of the Brain Feeder and Chionanthus Liver Pills, with Compound Essence of Cocaine, in milk and lime-water as a diet drink; sponge baths, vapour baths, or foot baths occasionally, using dry friction afterwards. Do not eat too much; abstain from alcoholic drinks; and the result will be a speedy cure. For a child, give daily four to six doses of the Child's Restorer, occasional hot baths, sponging with vinegar and water; attention to diet, &c.

2.—Or, proceeding according to the general directions

above given, let the medicine administered consist of the following :

Rp.	Decoction of Slippery Elm Bark	...	...	half a pint.
	Spear mint tea	...	...	a quarter of a pint
	Decoction of Pleurisy Root	...	...	„
	Bicarbonate of Potash	...	...	one teaspoonful

DOSE.—Two teaspoonsful to two tablespoonsful (according to age) every hour. Careful attention to diet is absolutely necessary.

Inflammation of the bowels may also be treated in the same manner as the above.

CRAMP.

This is a troublesome and painful complaint, and although when it attacks the limbs is not dangerous, but still it is most distressing. It may be considered as contraction of the muscles, brought on by the sudden action of cold, &c. It generally attacks the extremities.

This disease is dependent upon general derangement of the system, and its subjects are generally sufferers from indigestion.

TREATMENT. Let the patient take a course of the Brain Feeder and Chionanthus Liver Pills, this will be found to raise the vital power and so render the body able to resist the attacks of the external exciting cause. Let the limbs be well rubbed with the Compound Essenee of Cocaine.

CRAMP IN THE STOMACH.

Cramp in this organ is very painful, and if active measures are not promptly resorted to becomes a dangerous malady. It generally affects the gouty, dyspeptic, nervous, hysteric.

SYMPTOMS. Intense pain in the stomach. Its usual and immediate cause is flatulency.

TREATMENT. 1.—Immediately the attack seizes the individual prepare the following :—Brain Feeder and Compound Essence of Cocaine, of each two teaspoonsful, warm sweetened water four ounces. Give teaspoonful doses every few minutes. Get the patient to bed as quickly as possible. Apply a bottle of hot water to the feet, and a mustard and ginger poultice to the stomach. When the patient is easier, then treat the case as indigestion.

2.—Or, following the above, and give the following :

Coca Leaf $\frac{1}{4}$ ounce.

Composition Powder $\frac{1}{4}$ ounce.

Pour on them of boiling water half a pint, let them stand five minutes.

Give doses every few minutes. Afterwards proceed the same as for indigestion.

LIVER COMPLAINT.

Chronic disease of the liver is very common, 99 persons in every 100 being more or less affected with it. In some sections it is looked upon as an incurable affection, but I am satisfied, from an extended experience in its treatment, that it is entirely under the control of proper remedial agents. Certainly it requires time and patience, but what other chronic disease can we mention that does not require the exercise of these ?

The liver is the great depurating gland of the body. It works off all the carbonaceous material.

SYMPTOMS. The symptoms of chronic diseases of the liver are numerous, and vary according to the constitution of the individual. Among the more common symptoms may be mentioned the following : langour, lassitude, debility, tongue coated brownish, headache, constipation, indigestion, loss of appetite, drowsiness, even amounting to sleepiness, dull pain in the right side, pain between the shoulders,

sallow skin, yellowness of the eyes, irregular appetite, urine high coloured and often unnaturally hot. There is more or less depression of spirits, irritability of temper, &c., &c.

CAUSES.—Repeated attacks of cold, intemperance in eating or drinking, excess of fatty food or saccharine substances (sugar). In the hot months there is a tendency to a perfect stasis of the gland, which is more aggravated by the injudicious use of certain articles of diet and drink. The use of mercury as a medicine; sedentary and inactive habits; irritation in the neighbourhood of the organ.

TREATMENT:—1, This is a disease in which harsh treatment will be more productive of irritation than it will tend to lessen the disease. The following mode is an admirable treatment of the disease. Let the patient take one, or two of the Chionanthus Liver Pills three times a day, so that the bowels may be kept regular every day, the dose may be regulated according to the condition of the patient, but let sufficient of the Pills be taken to produce daily one or two evacuations of the bowels, which should be continued so that the evacuations approach as nearly as possible to the natural discharges. Besides the above give the patient doses (size according to conditions) of the Brain Feeder. If there should be acidity give with each dose of the Brain Feeder a tablespoonful of neutralizing mixture (appendix). The skin must be kept in a healthy condition: an occasional vapour bath (say once a week) will be found invaluable. The limbs should be bathed every day or two with warm water, in which is thrown one teaspoonful of soda, and in drying use a coarse towel and rub well. These means should never be omitted, the sympathy existing between this important organ and the skin is great.

The diet of the patient is likewise an important item. It

must be light and nourishing. All solid food to be thoroughly masticated.

2.—Or, give the patient the following medicine :

Chionanthus Virginica, in coarse powder 1 ounce
 Podophyllum, Am., powdered $\frac{1}{2}$,,
 Golden Seal, powdered $\frac{1}{2}$,,
 Composition powder 1 teaspoonful.
 Coca Leaf $\frac{3}{4}$ ounce

Pour on the above one and a half pint of boiling water, put in a warm place for one hour, stirring occasionally; strain, and bottle.

DOSE:—One or two tablespoonsful to be taken three times a day. Follow out the general directions above given.

I will close this article by quoting the following

LINES ON THE LIVER.

(From *Fun*, Nov. 12th, *slightly altered*.)

What fills my soul with musings black?
 What keeps my mind upon the rack,
 And gives me pains all down my back?

My liver!

What makes me turn from wholesome food?
 What makes me sometimes cross and rude,
 And would embitter paltry feud?

My liver!

What makes me disinclined for work?
 What makes me correspondence shirk,
 And oft its writers long to burk?

My liver!

What makes me always want to sleep?
 What weakens me until I creep,
 And makes me hold existence cheap?

My liver!

What makes me aye with fever burn,
 What makes me recreation spurn,
 And to black melancholy turn?

My liver!

And what will cure the growing ill,
 And stop my going down the hill,
 Restore my health and mend my quill?

Medical Echo.—A Chionanthus Pill.

PALPITATION OF THE HEART.

This term is applied to denote frequent, strong, and tumultuous movements of the heart; there is irregularity of the pulse, difficult breathing, depression; it is frequently attended by a painful sensation of sinking, referred to the region of the heart or pit of the stomach, in some cases a tendency to fainting and also general weakness.

CAUSES.—The causes range wide. Anything which exhausts the brain, indigestion, hysteria, anxiety, debility, sedentary habits, gout, disordered menstruation; onanism, sexual exhaustion, dissipation; intense study; or the excessive use of tobacco, alcohol, etc.

TREATMENT.—1. Let the medicine consist of doses of Brain Feeder in decoction of Motherwort. Regulate the bowels with the Chionanthus Liver Pills. If it arises from indigestion, then add decoction of Motherwort to the treatment laid down under that head. Sponge the body with vinegar and water; give as a diet drink, milk and Essence of Cocaine.

2.—Or, prepare the following:

Rp. Motherwort . . . 1 ounce

Boil in one and a half pint of water for ten minutes then pour the hot liquid on to

Coca Leaf . . . $\frac{1}{2}$ ounce

Sculeap . . . $\frac{1}{2}$ ounce

Let them stand for half an hour, then strain.

DOSE:—Two tablespoonsful to be taken three times a day.

RHEUMATISM.

There are two varieties of this painful disease, acute and chronic.

1—Acute Rheumatism, or Rheumatic Fever, is an acute inflammation of the larger joints, attended by well marked symptoms. It is probably due to the presence of free lactic acid in the blood. It usually follows exposure to cold and wet; or is a sequence of some other disease.

SYMPTOMS.—It generally sets in with all the symptoms of a severe cold; accompanied by great pain in the back and limbs, coldness and stiffness. In from one to three days some of the large joints become swollen, red, hot, and painful, excessively tender, the joints being attacked together or in succession. Pain is increased by the slightest movement. Constant thirst, tongue coated with white fur, bowels usually constipated; urine scanty and high coloured and acid; the skin often covered with profuse acid perspiration, having a sour smell; it may be complicated with other diseases.

TREATMENT.—1. As soon as pain in the joints commences give a vapour bath, afterwards sponge the body with nearly cold water, in which dissolve a little soda; the body should be sponged with alkaline water twice a day. During the baths, let the patient drink freely of Compound Essence of Cocaine in hot sweetened water. Let the medicine consist of the following:

Rp. Yarrow 1 ounce

Boil in one and a half pint of water for ten minutes. When nearly cold add three tablespoonsful of the Brain Feeder and half a teaspoonful of bicarbonate of potash. Mix well.

DOSE:—One or two tablespoonsful (according to age) to be taken every hour until the urgent symptoms are abated. The medicine may then be given at longer intervals.

Regulate the bowels with the Chionanthus Liver Pill. Careful attention to diet.

2—Or give the following medicine.

Rp. Yarrow 1 ounce
 Pleurisy Root .. ½ ounce

Boil in one and a half pint of water ten minutes, then strain on to the following :

Coca Leaf .. ½ ounce
 Bicarbonate of Potash 1 teaspoonful
 Con. position Powder 1 teaspoonful

Let them stand for twenty minutes, strain, and bottle.

DOSE:—One or two tablespoonsful to be taken every hour. As soon as the urgent symptoms are abated the dose may be given every three hours.

Follow out the general directions above given and the case will proceed favourably.

II.—Chronic Rheumatism. This may remain as the result of the acute form, or it may attack those who have been previously healthy. There is no fever, but the parts affected are painful and tender, the suffering being increased by motion. It is usually local. When it attacks the muscles of the loins it is called “Lumbago.” When the muscles of the back of the thigh are effected, it is called “Sciatica.”

CAUSES.—It is caused by improper treatment of Rheumatic fever, use of mercury, exposure to cold, hard labour, etc. etc.

SYMPTOMS.—Pain varying from dull to acute, affecting a single joint or muscle or a group ; it sometimes comes on suddenly, or at other times after a cold or shivering fit.

TREATMENT.—Pursue the same course as laid down for the acute form, with the exception that the medicine may be taken at longer intervals.

GOUT.

This affection is usually hereditary, it never attacks children ; men are more liable to it than women.

SYMPTOMS. A first attack of gout generally takes place in the ball of the great toe (a distinguishing symptom from rheumatism), accompanied by rigor, followed by feverish heat. During the night the part becomes painful, red, swollen, and very tender; the pain having reached its height the following evening, ceases, either suddenly or gradually, about midnight; general moisture breaks out, and the patient falls into a sound sleep. Next morning, the parts which were before so painful, are found of a deep red colour, tense, and shining. This round of symptoms may occur for several days and nights, but gradually subsiding until they disappear. It is, however, liable to recur.

CAUSES. It is due to the presence of urate of soda in the blood, which is deposited about the ligaments of the joints. It arises from full habit of body, animal food, alcoholic drinks, sedentary occupations, dyspepsia. It may be excited by cold feet, fatigue, anxiety, suppression of usual evacuations, &c.

TREATMENT. 1.—Live principally on vegetable diet; abstain from alcoholic drinks. Regulate the bowels by Chionanthus Pills. Brain Feeder as a medicine. Diet drink, milk and Essence of Cocaine. Rub the affected part with Compound Essence of Cocaine. Exercise in the open air.

2.—Or, rub the part with Tincture of Myrrh. Regulate the bowels by occasional doses of the aperient mixture.

SORE THROAT.

SYMPTOMS. The symptoms of this complaint are chills, fever, stiffness of the neck, soreness of the throat and difficulty of swallowing. The breathing and speaking are attended with a peculiar noise and hoarseness. There is often sickness, vomiting, anxiety, restlessness, flushed face, &c. The pulse is small, quick, and fluttering; countenance

is often full and bloated, sometimes pale and sunken, and frequently the breath becomes intolerably offensive. In all cases in which affections of the throat are suspected, it should be examined by depressing the tongue with a spoon whilst the patient is sitting before a bright light ; in cases of sore throat you will find the mucous membrane or lining of the throat of a red colour, and if it be "putrid or ulcerated" there will be patches of ulceration, these often become livid and black.

CAUSES. It arises generally from obstructed perspiration, or from the application of irritating substances, from unwholesome air or food, constitutional diseases, &c., &c.

TREATMENT. 1.—The following medicine should be taken :—Boil one ounce of yarrow in one and a half pint of water for fifteen minutes, strain, add Brain Feeder and Compound Essence of Cocaine, of each one and a half table-spoonful, mix. **DOSE.**—One to two table-spoonful every hour until the urgent symptoms of the attack have diminished. Soak a piece of flannel in Essence of Cocaine and apply to the throat, renewing it every hour. If the case is very severe let the throat be gargled every hour or two with the following mixture: Powdered Myrrh, half an ounce, boiling vinegar, half a pint ; stir well, when nearly cool add two table-spoonful of Essence of Cocaine. Regulate the bowels. Sponge the body every morning with vinegar and water, afterwards rubbing well with a coarse dry cloth. Hot foot baths at night will be found very useful. For children the doses of medicine must be smaller and sweetened.

2.—Or, following the general course of treatment as above given; administer the following mixture:

Rp.	Yarrow	..	..	1 ounce
	Bayberry Bark			1 ounce

Boil in one and a half pints of water for 15 minutes, strain, and pour on to

Coca Leaf $\frac{1}{2}$ ounce.

Composition Powder 1 teaspoonful.

Let them stand for 20 minutes, strain.

DOSE:—One or two tablespoonsful to be taken every one, two, or three hours, according to the urgency of the case.

The following is an excellent gargle: Powdered Myrrh half an ounce, Cayenne pepper one teaspoonful, pour on them half a pint of hot vinegar, let it cool, strain. Use a little every hour or two. To a part of this add a tablespoonful of salt, soak flannels and apply externally.

CHOLERA—DIARRHŒA.

CHOLERA is a disease more common in the hot summer months than at any other season of the year.

SYMPTOMS.—The patient suffers from constant vomiting and diarrhœa of bilious, or of pale, watery stools, usually preceded, or attended, by a griping pain of the abdomen, and severe cramps of the extremities. The tongue is furred, the pulse feeble, the voice husky, and there is great thirst and depression.

CAUSES.—Excessive heat, sudden transition from heat to cold; the summer and autumnal seasons; indigestible food; unripe fruit; putrid meat or vegetables; drastic purgatives; colds; irritant poisons, etc.

TREATMENT.—1. Get the patient to bed. Apply bottles of hot water to the feet. Give the following medicine in doses of from one teaspoonful to two tablespoonsful every hour or two: Decoction of Slippery Elm bark, half a pint; mint tea, half a pint; Brain Feeder, three tablespoonsful, mix. Use all means possible to get the patient into a perspiration. If the tongue is white furred add to the above

medicine a teaspoonful of bicarbonate of Potash. Afterwards the medicine may consist of equal quantities of Brain Feeder and Compound Essence of Cocaine. Let the diet be light and nutritious: beef or chicken tea, tapioca, biscuits, Milk and Essence of Cocaine. N.B.—The perspiration may be promoted by bathing the body with a hot decoction of herbs.

2.—Or, give the following medicine: Boil one ounce of Rhubarb Root in one pint of water for ten minutes, then pour the boiling liquid on to one ounce of peppermint herb, Coea Leaf, half an ounce, and a quarter of an ounce of Bicarbonate of Potash; let them stand 15 minutes; add a little sugar when strained. DOSE: one, two, or three tablespoonsful every half an hour. This is an excellent medicine. Hops simmered in equal parts of vinegar and water, and cloths rung out of the liquid and applied to the bowels, changing every few minutes; this is good.

DIARRHŒA.—This is a frequent discharge of semi-solid or fluid stools, attended with more or less irritation and pain of the stomach and bowels.

SYMPTOMS.—There are often thirst, deficient appetite, and slight depression; griping pains, constant purging, motions offensive, watery, sometimes mucous and streaked with blood.

CAUSES.—It is very common in the latter part of summer and the autumn. It is produced by the ingestion of fruits—green peas, cucumbers, pears, etc.; exposure to cold and damp; it is also produced by emotional excitement in nervous people.

TREATMENT.—1. Keep the patient warm, and use means to induce perspiration. Give the following medicine:

Rp. Bayberry Bark, in powder, ... 1 ounce.
Cinnamon Bark, in powder, ... $\frac{1}{4}$ ounce.

Pour on them one pint of boiling water, let them stand for 15 minutes, strain on to the following

Gum Arabic ... 2 ounces.

Brain Feeder ... 4 tablespoonsful.

Stir until thoroughly dissolved.

DOSE:—Two teaspoonsful to two tablespoonsful every hour until easier.

Let the diet be light and nourishing. Give milk, lime water, and Essence of Cocaine.

2.—Or, give the following medicine :

Rp. Coca Leaf ... ½ ounce.

Bayberry Bark, powdered 1 ounce.

Bistort Root, Powdered... 1 ounce.

Cinnamon Bark and Composition powder, of each
a quarter of an ounce.

Pour on these ingredients one pint of boiling water, let them stand 15 minutes, strain on to 2 ounces of Gum Arabic, stir until dissolved.

DOSE:—Two teaspoonsful to one tablespoonful every half hour.

GENERAL EXHAUSTION.

This very prevalent malady, existing in various degrees, arises from physical and mental causes. Men in their eager struggles to outstrip time in the transaction of mundane affairs,—transactions of business, amassment of wealth, etc., are woefully regardless of the health of the human body, which, although apparently so very accommodating, is governed by fixed physical laws, like unto all other systems, whether celestial or terrestrial, whether among the planets or on the earth. And, as in these latter systems any disturbance of their equilibrium, such for instance as the colloidizing of two planetary bodies, changes their contour and physical condition, so in the human body, any disturbance of nature's equilibrium causes

want of harmony in the action of some one or all of the various organs of that body.

All the organs of the body require, for their natural action, a maximum supply of nervous influence. This is absolutely necessary for the existence and maintenance of an healthy action of the body. And it is very evident that the action of the mind is continually influencing the action of the various organs of the body, even so must the inordinate or excessive action of the mind, through the brain, detract from the natural action of some or all of the organs of the body, viz., by detracting from the natural supply of nervous influence. The mind and the various organs of the body are continually reacting on one another, through the Brain and nervous system; indeed the reaction is so immense, that great, and even perpetual, derangement and disorganization of some, perhaps remote organ, may occur; the disease being brought on by the exhaustion of the nervous force of the Brain by intense application to study or business, and the subsequent deficiency of supply of nervous influence is, in some cases, so great as to cause partial paralysis, or a breakage in the nervous continuity of the part. The remote manifestations may, the more easily, be brought about when there is a condition in the system in which hereditary taint exists, or, where a condition of superimposed tendencies has previously become engendered. Inordinate fatigue of the mind will cause a degree of bodily havoc which is truly astonishing. Such a condition may also be brought about by the undue excitement of the mind which is so great a concomitant of Railway travelling. The influence upon the Brain and nervous system of this great system of transportation is of vast importance; such racing against time, and the attendant enervating influence of the excitement, is positively disagreeable to some delicate organizations.

But, not only is mental fatigue productive of conditions of exhaustion, bodily fatigue is capable of inducing it. Freedom from *excessive* physical labour is as necessary for tranquility and cheerfulness, as is freedom from excessive mental application. Although intense mental application causes the greater wear and tear of the bodily forces; and yet, a proper amount of mental work is as necessary for healthiness as a proper amount of physical action. Excessive bodily fatigue undoubtedly greatly exhausts the Brain of its force; this may be easily shewn by looking at an individual who has thoroughly fatigued himself by a very long walk: he is unable to walk straight, he has lost a certain amount of control over the muscular system—the voluntary and involuntary actions are performed in a vacillating manner—there is deficiency of that force which is necessary for a healthful balance of the muscles. The advantages of a proper amount of physical exercise cannot be too highly extolled, but it should be graduated according to the physical requirements of the individual.

When there is no special cause, or no predisposition which points to a particular organ as the part, for the time being, possessing the least resistance, then the case presented is one of well balanced organs in health but the exhaustion is shewn to be general—general loss of power.

If the exhaustion is localized, it is due to the predisposition in the part affected, and it suffers, first, owing to the general diminution of nervous force, the parts become less and less supplied, according to the progress of the disease; thus the body is injuriously affected by the general depression; and second, it affects the system, acting painfully only on the part possessing the least resistance to the attack.

TREATMENT. (*General*). The treatment of general

exhaustion must essentially be based upon the principle of imparting force to the Brain and nervous system.

It is of great importance that the patient be impressed with the idea that diseases which have taken a great length of time for their development, or which have been in actual existence in the patient for an extended period, require, for the effectual action of remedial agencies in order to effect a cure, a long course of treatment, perhaps extending over months, and as a consequence, a proportionate amount of that frequently deficient quality—patience. It is a great error, which I am sorry to say many patients fall into, to suppose that an affection, which has, perhaps, been developing for years, can and ought to be cured in a certain limited period; such an error is sure, in a great number of instances, to lead to disappointment. Patience with a continuance in the use of the means recommended in this book, is sure, eventually, to work a cure, that is, providing that the disease has not advanced and taken too great a hold of the patient. Hundreds of patients, who have suffered from disease for years, *have been cured* by the means here recommended.

1.—The general course of treatment should be the following:—Vapour baths, at least once a week; daily sponging the body with the sponge-bath mixture of water, salt, vinegar, and Essence of Cocaine; afterwards dry friction. Exercise proportionate to the physical condition. Careful attention to diet is always absolutely necessary, it should be light and nourishing, rich in all the elements of good blood—for the Brain and nervous system receives its food from the blood only: should consist of beef-tea, chicken broth, raw eggs, oysters, broiled beef-steak, light puddings, fruits, bread made from the entire wheat flour, milk; I can recommend nothing equal to milk and Com-

pound Essence of Cocaine, as a diet drink: the weakest stomachs will bear it.

The medicine part of the treatment should consist of the following:—give doses of the Brain Feeder every four hours, in infusion of Coca Leaf. Regulate the bowels by taking one, two, or three of the Chionanthus Liver Pills twice or thrice daily, according to requirements. Should there be local paralysis apply electricity to the part daily, and give the doses of Brain Feeder in a portion of the following mixture:—

Rp. Prickly Ash Bark, powder ... 1 ounce.
Coca Leaf 1 „
Boiling Water 1½ pint.

Let them stand for half-an-hour, press out the liquid, strain.

DOSE.—One and a half tablepoonsful. Should Indigestion be a prominent symptom, treat as given under that head.

2.—Or give the following mixture:

Rp. Coca Leaf 1 ounce.
American Valerian 1 „
Golden Seal, powdered . . . ½ „
Composition Powder ¼ „
Boiling Water 1½ pint.

Let them stand for three quarters of an hour, press out the liquid, strain.

DOSE.—Two tablepoonsful to be taken three times a day. Regulate the bowels by taking doses of the Aperient Pills.

If Local Paralysis, add to the above ingredients three quarters of an ounce of Prickly Ash Bark Powder. Carefully follow out the general directions given above.

EPILEPSY, OR FALLING SICKNESS.

Fits recurring at irregular intervals, with sudden loss of sense and power of motion, generally followed by a shriek,

SYMPTOMS. An attack of this disease may commence with a shrill cry, or this may be preceded for a few minutes by a creeping sensation of cold, in other cases by giddiness, headache, or a twitching movement of the limbs; often the patient suddenly falls in a state of unconscionness, the face is distorted, limbs violently convulsed, lips blue, frothing at the mouth, the tongue is often bitten. A fit will usually last about fifteen minutes, and is followed by a deep, heavy sleep. The patient may be in fair health, during the intervals, but the mind gradually becomes feeble, and there is a want of mental and physical energy.

CAUSES. Whatever tends to debilitate the nervous system may be reckoned among the causes of this malady; serofula; organic disease of the brain; syphilis; debility, general or sexual; excessive or suppressed discharges; it may be excited by sudden fright, fits of passion, emotions of the mind, irritation from worms, pressure on the brain, &c.

TREATMENT. 1. In treating a patient suffering from this malady, first remove all sources of irritation; if the irritation is in the brain, and the patient complains of headache, giddiness, fulness in the blood-vessels of the head, put the feet in mustard and water, or in severe cases a mustard plaster may be applied to the nape of the neck, regular exercise, unirritating diet, application of cold to the head; if the irritation is in the uterine organs, then give warm alkaline hip baths, foot baths, &c. In the epilepsy of children give warm foot baths, aperient medicines, use all means to induce free perspiration.

Give the following medicine:—American Valerian, one ounce. Boil in one-and-a-half pint of water for fifteen minutes, strain, cool, and add three tablespoonsful of

Brain Feeder. DOSE.—One to two tablespoonsful (according to age) to be taken four times a day. As soon as a fit is perceived to be commencing or has actually commenced, put two or three teaspoonsful of the Brain Feeder into two tablespoonsful of water, give a teaspoonful every few minutes. This will shorten the fit. If the patient is a child give repeated doses of the Child's Restorer in a little tea made from American Valerian. Regulate the bowels by the use of the aperient mixture (appendix). Above all things let the diet be light and nourishing. Milk and Essence of Cocaine as a drink.

2. Or, give following medicine :

Queen's Delight $\frac{1}{2}$ ounce

American Valerian 1 ounce

- Boil in a pint and a half of water for ten or fifteen minutes, strain on to

Serpentaria Root, bruised... .. $\frac{1}{2}$ ounce

Coca Leaf $\frac{3}{4}$ ounce

Let them stand for half an hour, strain, sweeten a little if necessary.

DOSE. One teaspoonful to two tablespoonsful (according to age) to be taken every three or four hours.

Regulate the bowels by taking the aperient pills or the aperient mixture.

AMAUROSIS, OR NERVOUS BLINDNESS.

This is a partial or total loss of vision, arising from cerebral exhaustion, and consequent paralysis of the optic nerve, or retina; in a vast number of cases it is due to reading in a railway carriage, the brain through the nerve of the eye straining to keep up the connected reading by intense concentration upon the print, receives a continuous series of shocks by the jarring and motion of the carriage, a condition of excitement is set up, this depresses the optic nerve and causes impairment of vision;

it is thus evidently due to Brain Exhaustion; it appears sometimes as though a cloud was before the eyes. It may be caused by congestion brought on by concussion.

TREATMENT. 1.—Let the patient take the Brain Feeder as a medicine. Keep the bowels regular by the taking of occasional doses of Chionanthus Liver Pills. Bathing the head in cold water every morning; foot baths. An irritating plaster at the back of the ear will be useful.

2.—Or, let the patient take two teaspoonsful of the Glycerine Extract of Coca three times a day. Occasionally doses of the Aperient Pills.

NEURALGIA, TOOTHACHE.

Neuralgia, or Tic Douloureux, is a painful affection of the fifth pair of nerves. It may also affect other parts not supplied with branches of this pair of nerves. When it affects the great nerve of the leg it is termed sciatica; other parts, as the ear, chest, &c., are liable to it.

It has its predisposing and exciting causes; it is very common to females, particularly during pregnancy, and more especially to the delicate, who, from a low state of vitality, are peculiarly liable to it upon all occasions where disturbance of any kind is set up, whether from physical or mental causes; or it may arise from cold, *dyspepsia*, nervous and spinal irritation, *hysterics*, or anything that disarranges the system in any way.

TOOTHACHE An old author thus explains the cause of toothache, "Within the tooth is a cavity filled with a nervous pulp—of course highly sensitive—and under the influence of injury, exposure, and disease, affords a source of toothache." The roots of teeth are surrounded by membranes; inflammation in these membranes is another source of toothache, they become filled with blood, but

cannot expand, and consequently compress the nerve with the power almost of a hydraulic press, causing most intense agony.

SYMPTOMS. The distinctive symptoms of neuralgia are a violent, darting, and plunging pain, occurring in paroxysms coming on at longer or shorter intervals; there is no outward inflammation or swelling; nor is there, usually, any constitutional derangement except that caused by the intense pain, loss of rest, &c.

TREATMENT. 1.—If the cause is irritation of some form, remove it; daily bathing—warm, tepid, or salt-water baths; hot foot baths during the paroxysms. Nourishing diet; discard all stimulants, very little tea; drink milk and Essence of Cocaine. Regulate the bowels by taking Chionanthus Liver Pills. Vapour baths occasionally are excellent. Give repeated doses of the neuralgia mixture recommended in the appendix.

2.—Or, give the following mixture:—

Infusion of Coca Leaf	...	...	...	$\frac{3}{4}$ pint
Tincture of Sculleap	...	...	...	1 ounce
Tincture of Gelsemium	..	...	...	$\frac{1}{2}$ ounce. mix.

Dose Two teaspoonsful to one tablespoonful every quarter of an hour for the first hour, and afterwards, if required, give the doses at intervals of two hours. Careful attention to the bowels is necessary.

If the disease is occasioned by decay of teeth, have the decayed one removed if practicable.

SCROFULA, TUBERCLE, STRUMA, KING'S EVIL.

These are synonymous terms used to designate the most important among the morbid taints which may be traced to Brain Exhaustion. It is an impaired vital force under which we have blood formed in the body weak in all the

elements of life, and which, upon any irritation, deposits a peculiar tuberculous matter in the substance of various organs of the body, which condition may also be transmitted from parent to child. This Brain Exhaustion and organic change in the nervous system causes a deranged condition of any predisposed organ (be that predisposition either hereditary or acquired), dilatation of the capillaries takes place, and the tuberculous matter exudes through the lax coats of the capillaries, and is deposited. This tuberculous matter undergoes several changes after it is deposited, and it excites irritation in the substance of the gland or organs, then we have inflammation, and, lastly, ulceration and disorganization.

SYMPTOMS. The scrofulous constitution is indicated by a lax habit of body; all the natural functions are liable to be impaired and irregularly performed; digestion feeble; bowels torpid; skin dry; action of heart feeble, and there is deficiency of life in every structure of the body. The earliest external characteristic symptoms are glandular swellings, particularly of the neck; these scrofulous tumours may appear on the neck, under the chin, the armpits, feet, groin, legs, hands, and breasts. They are very languid in their progress. After the deposit of the tuberculous matter, irritation, inflammation, then comes the ulceration, when they begin to break into little holes, a puriform matter begins to ooze out, which gradually changes to a kind of viscid serous discharge.

CAUSES. *Predisposing causes* are:—Hereditary taint, syphilis, gout, a shattered constitution of one of the parents; use of tobacco, alcohol, acting on the parents: or anything which impairs brain force, will produce this diathesis. *Exciting causes*:—All causes of exhaustion, sedentary habits, scanty and unwholesome food; impure

air; overwork, damp, exhausting diseases; the depressing effect of novels, romances, etc. In children, the irritation produced by worms, diarrhoea, improper dietetic and hygienic management. Anything, in short, which tends to depress or exhaust the Brain.

TREATMENT. 1.—In the treatment of this disease there are two things which require attention; *first*, the external manifestation of the disease; *second*, the constitution. The latter should claim the greater share of attention.

Constitutional Treatment. Prepare the following medicine, which let the patient take perseveringly:

Rp. Queen's Delight, in powder ... 1 ounce.

Pour on the powder, Boiling water one pint, let it stand for half-an-hour, strain, and add three tablespoonsful of Brain Feeder.

DOSE:—One or two tablespoonsful three or four times daily. Keep the bowels regular by taking frequent doses of the Chionanthus Liver Pills. After two or three weeks perseverance with the above medicine (remember it is a disease which cannot be removed in a few days!), substitute for the Queen's Delight one ounce of Prickly Ash Bark, powder; dose as before. If there is acidity of the stomach, give milk, lime water, and Essence of Cocaine; indeed as a regular diet drink this will be found far superior to coffee, tea, cocoa, etc.

Diet.—This is an important part in the consideration of Scrofula. A diet light and rich in the elements of blood is absolutely necessary; Broth, good fresh mutton, broiled beef steak, eggs, oysters, milk, roast and stewed fruit, wheaten bread, etc.

External Treatment.—If the enlargements have not advanced beyond the first stage, it is quite possible that their progress may be checked by the application of the following liniment which will cause their absorption and

dispersion: Take equal parts of Tincture of Iodine and Tincture of Cayenne, apply with a camel-hair brush three or four times a day.

Should the case be far advanced, and the enlargements look red and inflamed, apply the following poultice: Slippery Elm bark powder, 2 parts; Bayberry bark powder, 1 part; Ginger powder, 1 part; mix with nearly boiling infusion of camomile flowers. This may be applied each night, at bedtime. Continue this until it breaks. Do not have it cut, as is a common practice. When it has broken wash with a weak solution of sulphite of soda every day, and afterwards apply the Ointment given in the appendix. Give vapour baths; sponging with vinegar and water.

2.—Or, minutely following the above general directions, let the following medicine be administered:

Rp.	Queen's delight, powder,	...	1 ounce.
	Prickly Ash Bark,...	...	1 ounce.
	Bayberry Bark	... ..	$\frac{1}{2}$ ounce.
	Coca Leaf	... ..	$\frac{1}{2}$ ounce.

Boiling water one and a half pint. Let them stand for half an hour, stirring occasionally; strain, add a quarter of an ounce of sulphite of soda, stir until dissolved, bottle.

DOSE:—Two teaspoonsful to two tablespoonsful to be taken four times a day. Regulate the bowels by taking doses of the aperient Pills, (appendix.)

If there is emaciation give one or two teaspoonsful twice daily of the Compound Syrups of the Hypophosphites of Iron, Soda, and Lime, with the Glycerine Extract of Coca Leaf.

DROPSY.

This affection generally follows some other disease. The causes are difficult to determine, but it may arise from mechanical obstruction, from debility, fever, pulmonary, liver, or heart disease.

SYMPTOMS. The disease shews itself first in the feet and ankles, the swelling of which may disappear on lying down; soon the swelling becomes permanent, it ascends to the thighs and trunk, and is distinguished by pitting which follows the pressure of the fingers on the part; the urine is usually reduced in quantity, and high coloured, and deposits a thick, waxy sediment, the skin is pale, like marble, cold, tense, shining, and dry: if the progress is not checked, the skin may rupture and the collected fluid thus escape. There is difficulty of breathing, palpitation, flatulency, and drowsiness frequently accompanying the disease.

TREATMENT.—1. The use of vapour baths—say two or three times a week—are an invaluable agent in the cure of this disease. Give the following medicine:

Rp. Juniper Berries, bruised 2 ounces.
 Prickly Ash Bark, powdered ... 1 ounce.

Pour on these ingredients a pint and a quarter of boiling water, let them stand half an hour; strain, add three table-spoonful of Brain Feeder, and half a teaspoonful of bicarbonate of Potash.

DOSE:—Two table-spoonful three or four times a day.

Keep the bowels open by taking one of the following powders every, or every other, night: Cream of Tartar, two table-spoonful; Jalap powder, one table-spoonful; Rhubarb Powder, one table-spoonful; mix. Divide into four powders. Sponge the body daily with vinegar and water, using dry friction afterwards. Food—nourishing and digestible, milk, or milk and lime water, with Essence of Cocaine.

2.—Or, the above treatment may be carried out, but substituting for the Brain Feeder, in the medicine, the same quantity of Glycerine Extract of Coca.

FEVER.

This word *fever* is derived from the Latin, *febris*, to burn.

It is a name applied to that class of diseases characterized by abnormal heat of the skin, unnatural frequency of the pulse, and general disturbance of the whole organism.

Fever consists essentially in elevation of temperature, which arises from increased tissue change; there is a destructive metamorphosis of the solids of the body; these abnormal conditions have their immediate cause in diminished Brain power and consequent deficiency of nervous influence.

The exciting cause of fever is a poisoned state of the blood; this condition is brought about by various means: as, *first*, a chill, which closes the pores of the skin, and thus prevents the excretion of the effete matters, which accumulate and collect in the blood; or, *second*, the poison may exist in the atmosphere, by the decomposition of animal or vegetable organisms, and may enter the blood by being carried with the air that is inspired into the pulmonary tract, and thus into the air vesicles. Here it is absorbed into the circulation by the minute blood-vessels which make their way from the heart over the lungs, and which ramify upon the vesicles, and the blood is carried by the pulmonary arteries into the left auricle of the heart, it is then forced into the left ventricle and from this to the aorta, which conveys the blood to all parts of the body. At every inspiration this poisoned air comes in contact with, and is absorbed by, the blood, until that fluid becomes in a thoroughly vitiated condition; or, *third*, the poison may be conveyed into the body with the food: water is a frequent conductor of these poisonous matters, which are absorbed by the absorbent vessels of the digestive organs, and thus carried into the blood. Though the poison enters the system by various means, yet it acts upon the body by influencing the one system

of governors—viz, the Brain and nervous system, and it is only where there exists a feeble state of this system that fevers are produced; the affection being in proportion to the powers of vital resistance—in proportion to the integrity of the nerve centres. To illustrate and prove the truth of this assertion, let us take an example: half a dozen men shall under precisely similar external conditions, be removed from a hot room to a cold atmosphere known to contain poisonous effluvia, or disease germs; or, shall drink of the same contaminated water. Of these six men, four shall have attacks of fever of some form, varying according to internal bodily condition and the kind of poison by which they are influenced; the remaining two of the six men shall remain entirely free from fever or any disease whatever. Why this difference of result? All have been subject to the same influences and under like external conditions. Upon what principle can we explain this variation? In all cases the blood has been equally exposed to the poison with the results given; and the only reason that can be assigned for the difference of results, is, that, the power of the Brain and the influence of the nervous system was of sufficient amount in the two unaffected men to overcome—to resist, the action, on the body, of the poison received. Thus, on the one hand, where the vitality—the Brain force—is of sufficient amount, fever poison will have no effect upon the individual; while, on the other hand, where the nervous power is insufficient to ward off the attack—when the nervous system is exhausted by her efforts to overcome—then there is diminished control over the various organs of the body. They begin to work abnormally: the pores of the skin are closed; the equilibrium in the production and loss of heat is disturbed; a larger amount of work is thrown upon the Lungs, Kidneys,

etc., in the excretion of the urea and other effete matters, which under normal conditions, should leave the body through the pores of the skin. There is increased action of the heart,—circulation of the blood; work produces heat, and with the pores of the skin being closed, the processes termed exudation and evaporation are prevented, and consequently the heat produced not being moderated by evaporation, which produces cold, is pent up, as it were, in the system. This increased internal work necessarily entails greater loss of muscular and nerve fibre; there is thus an abnormal disintegration of tissue—a destructive metamorphosis; and during these proceedings the supply of food is diminished: the organs of digestion are not in a position, from the diminished supply of nervous influence, to digest a sufficient amount of food-stuff. All these conditions and circumstances act as further exhausters of the Brain and nervous system: both by increasing the work, and, on the other hand, diminishing the supply of nutritive blastema necessary for healthy nutrition. We have, as a consequence of internal activity, increased production and excretion by the Kidneys and Lungs, of urea, of potash salts, and of carbonic acid; and where the supply of external food is insufficient to keep up the body under this greater activity and waste, there is progressive loss of body weight. Thus the poison acts upon the brain, spinal cord, and nerves as a direct depressing agent; its tendency is to impair or destroy the vitality of the organic nerve-cell. If once the poison gains the victory over the Brain and nervous system at any one point, then the destruction becomes general, the nerve-centres becoming depressed; there is less vital force; and in consequence, there is a diminution in the amount of red corpuscles in the blood.

SYMPTOMS.—The leading symptoms of fever are, frequent chilliness, or shivering, or lassitude, this is quickly succeeded by increased heat of the skin, accelerated pulse, pains in the limbs, coated tongue, loss of appetite and thirst, most of the functions of the body are somewhat deranged; the secretions are more or less vitiated, those about the mouth become viscid and dark owing to accumulations of the biliary secretion; difficult respiration; nausea; urine sometimes scanty and high coloured. The nervous system is so depressed that there is produced such symptoms as stupor or confusion, great weakness, with giddiness or vertigo, and a tendency to fainting on attempt at exertion; there are derangements of the external senses—generally diminution—such as slight deafness, etc.; failure of the intellectual faculties—caused by alteration in the structure of the brain, brought about by deficiency of food supply to that organ—as shown by delirium, generally unattended with violence, but approaching in character to stupor,—low and muttering. As a consequence of diminution of nervous force over the process of digestion, etc., the condition of the blood is altered, coaguability being lost, sometimes showing signs of putrescency, and upon irritation of the surface, gangrene arises; the red corpuscles are, in such cases, abnormal in size and quantity, and often break and allow the effusion of the colouring matter through the serum or into the tissues, giving rise to the purple spots and passive hemorrhages characteristic of some forms of fever. There is in some forms of fever a characteristic eruption, consisting of pimples or pustules.

We have seen that the exciting causes of fever may be either sudden changes from heat to cold, or conversely; cold, exhalations from decomposing organic matter, the

inhalation of disease germs, etc. It is a remarkable circumstance that some fevers are the effect of some agencies of local or temporary operation; we have good evidence of the existence of two, one or other of which, or perhaps both combined, are the immediate external causes of all idiopathic fevers, viz., malaria or contagion.

The forms of fever produced by the action of marsh miasm or the products of the decomposition of vegetable matter, and which cause is local, are termed ENDEMIC, and are not communicated by personal intercourse, hence they are non-contagious.

Other forms of fever are observed to prevail for a time in a community; attacking large numbers of individuals in quick succession, passing from one community to another, and in this manner traversing whole communities: these are EPIDEMIC, and are contagious.

The following are the more common forms of fever, and their characteristic symptoms.

Intermittent, or Ague. Consists of regular paroxysms or periods of fever, between each of which there is a perfect breakage from fever symptoms.

Typhus is a continued fever characterized by stupor, a dusky hue of the countenance, extreme weakness; and the appearance of a peculiar eruption upon the skin, about the fifth or sixth day which lasts to the end of the attack, the eruption is of a dark colour and *does not disappear on pressure.*

Typhoid is distinguished from typhus by the insidiousness of the attack; mind duller, wandering, cheeks have a bright flush; irritation of stomach and intestines; eruption of rose coloured spots about the seventh day, *which disappear, for a moment, on pressure.*

Small-pox. A highly contagious and infectious disease

caused by a specific poison, distinguished from measles and scarlatina by the eruption being preceded by severe pain and weakness in the back, rigors, vomiting, headache, restlessness, and by the appearance of an eruption about the 2nd or 3rd day, the eruptions at that time feeling as if shot were under the skin, which gradually enlarge until they become pustules with a depressed centre, and containing a thin fluid which gradually increases in consistence.

Measles. This is a contagious and infectious fever, commencing with all the symptoms of a cold, and followed by a peculiar eruption, of a *dingy-red* colour, which *first appears on the face, neck, and upper extremities*, and usually disappears about the fifth day, being succeeded by the skin peeling off like *scurf or bran*.

Scarlatina. This is an infectious, contagious, and febrile disease; characterised by a *diffused scarlet rash, some affection of the throat, and the absence of catarrhal (cold) symptoms*. The rash disappears about the fifth day, and is followed by a copious peeling of the skin.

TREATMENT. The treatment of *ague* should consist of vapour baths or foot baths of hot water and mustard, given during the cold stage. Give the following medicine:—Decoction of Yarrow, 1 pint; two tablespoonsful each, of Brain Fecder and Compound Essence of Cocaine; mix. **DOSE.**—Two tablespoonsful every half hour during the attack; in the interval give the doses every three hours. *Diet* light and nourishing, milk and Essence of Cocaine as a drink. Regulate the bowels by giving Chionanthus Liver Pills. Or, give the following medicine:—Boiling decoction of Yarrow, one pint; pour on to Coca-leaf, half an ounce; Composition Powder, one teaspoonful. Let them stand for 20 minutes, strain. **DOSE**, same as above. Regulate the bowels by giving the Aperient Pills (appendix).

1.—In the other forms of fever, which are attended, more or less, with a certain amount of some form of eruption, proceed as follows: An attack of either form may be materially shortened by giving a vapour bath at the commencement, if the patient is over eight years, if under that age, a warm water bath in which is thrown a small quantity of soda; afterwards let the body be sponged with vinegar and water—equal parts,—then using dry friction. Now put to bed and give a strong dose of Compound Essence of Cocaine in hot sweetened water, and two or three Chionanthus Liver Pills; this treatment, if followed by repeated doses of Brain Feeder will, in a large percentage of cases, entirely avert any serious symptoms, and the patient will become relieved of a large amount of suffering, by a speedy recovery.

If the patient cannot undergo, from the great exhaustion, the vapour bath, let him be sponged over with the following decoction: Yarrow, two ounces; water, two quarts; boil for ten minutes, strain, and add two table-spoonsful of Compound Essence of Cocaine or one table-spoonful of mustard, and half a pint of vinegar; after sponging with this mixture dry well with a rough towel, and give a dose of Essence of Cocaine and Chionanthus Liver Pills. As a daily medicine give doses of Brain Feeder or Child's Restorer, according to age, every two or three hours, in a warm infusion of either balm, marjoram, or Pennyroyal, or decoction of Pleurisy Root. If the disease has full influence over the patient and there is costiveness, give a good dose of the Chionanthus Liver Pills, or of the Aperient Pills, or, in children, a dose of Castor Oil; this may be required to be repeated; and if there is irritability of the bowels, the quantity passed may be small, then give the doses larger so as to produce two pretty free

motions a day. If there be diarrhoea it will not do to check it too suddenly: give from five to twenty drops of Tincture of Hamamelis in each dose of medicine.

Should there be *delirium*, put the feet and legs in hot water and mustard for ten minutes, this will generally withdraw the pressure of blood from the head. Should there be affection of the respiratory organs as cough, difficulty of breathing, give occasional doses of Cherry Bark Cough Balsam; an irritating plaster on the throat and chest is also valuable.

Should there be suppression of urine apply to the bottom of the bowels a poultice of onions boiled very soft.

Let the patient be sponged daily, and in small-pox, measles, and scarlatina, twice or three times daily with the following: Warm water, one quart; bicarbonate of soda, one teaspoonful, mustard two teaspoonsful; use fresh each time.

Keep in a quiet bed in a well-ventilated and warm room, as free as possible from carpets, &c. In small-pox the body-linen and bed clothes should be changed daily. Sponging must be promptly used. Use a disinfectant, as Chlorinated Lime, or Condyl's Fluid.

Diet.—Milk; milk and lime water with Essence of Cocaine, gruel, arrowroot, beef tea, raw eggs. No cold water allowed; all drinks must be warm. If the patient is thirsty let him drink freely of the Compound Essence of Cocaine in warm milk or sweetened water.

Treatment of Children. It is usually advisable to give, in the first instance, an emetic dose of Ipecacuanha Powder (5, 10, or 15 grains) with bicarbonate of Potash (3 or 5 grains), allowing the patient to drink freely of warm marjoram tea with Compound Essence of Cocaine. Afterwards give an alkaline bath, first wash the feet, gradually

allowing the patient to sit in the bath, washing well the upper parts; then dry well and place in a warm bed. Give the Child's Restorer in warm Pennyroyal tea every one to three hours, dose according to age. If any cough, give occasional doses of Cherry Bark Cough Balsam. Give, daily, warm foot baths, not neglecting to sponge the body; keep out of all draughts. As soon as convalescence is established, either in adults or children, the patient may gradually return to usual diet. The medicine may afterwards be given cold and less frequent.

2.—Or following the general directions give the following medicines :

Rp.	Coca Leaf	...	...	...	...	...	$\frac{1}{2}$ ounce
	Boneset	..	...	...	...	...	$\frac{1}{2}$ ounce
	Composition Powder	...	...	...	...	...	$\frac{1}{2}$ ounce
	Boiling Decoction of Pleurisy Root, a pint and a quarter, mix, let them stand for twenty minutes; strain.						

Dose.—One or two tablespoonsful to be taken every one or two hours, warm, until convalescence is established.

As soon as convalescence is established, then prepare the same mixture, but adding to the ingredients half an ounce of Golden Seal in powder. The Dose to be taken four times a day. Regulate the bowels by taking 5, 10, or 15 grains of Rhubarb Powder, twice daily.

For children give the above, sweetened, in doses of one or two teaspoonsful.

If there is any cough or difficulty of breathing give an occasional dose of the Pulmonary Syrup (appendix).

In cases of small-pox give the following medicine :

Rp.	Cream of Tartar	...	...	...	...	$\frac{3}{4}$ ounce
	Rhubarb, in powder	...	...	...	...	1 dram
	Golden Seal, in powder	...	..	...	...	$\frac{1}{2}$ ounce
	Hot Infusion of Coca	...	...	...	...	$\frac{3}{4}$ pint

Let them stand for one hour.

DOSE.—A wineglassful every hour ; children regulated according to age. Shake up before measuring out the dose.

INCONTINENCE—DIFFICULTY IN VOIDING URINE—
STRANGUARY.

Incontinence or involuntary passage of the urine is generally due to general weakness, indigestion, &c., treat as such.

Difficulty in voiding urine may exist in every degree, from momentary arrest of the flow, with or without pain, to complete retention. Some degree of pain generally attends the attempt to discharge the urine, and in severe cases the suffering becomes intense.

In *Strangury* the urine can be voided at will, but it only passes away by drops, and is attended by burning and cutting pains at the neck of the bladder. It may be caused by stimulating injections, abuse of alcoholic drinks, strong irritants, &c.

TREATMENT. Give Brain Feeder every few hours, with a few grains of Bicarbonate of Potash, in decoction of Marsh Mallow Root (appendix). Or, make the following mixture : Coca Leaf, half an ounce, Buchu, half an ounce, Boiling decoction of Marsh Mallow Root, one pint ; let them stand together for half an hour ; strain. **DOSE.**—One teaspoonful to two tablespoonsful every three hours. Keep the bowels open. If there is much pain, boil some onions, make a poultice of them, and apply to the bottom of the bowels. Careful attention to diet ; Essence of Cocaine and milk as a drink.

X SEXUAL EXHAUSTION..

“There is a vast deal of injury done to individual health by the abuses and excesses of the reproductive functions ; the primitive fathers and physicians have duly noticed the evils to which I allude, and every experienced medical practitioner can test their frequent

occurrence. It is all very well for *sentimentalists and the mock modest to declaim about a notice of them, but justice, morality, and the preservation of health, as well as the perpetuation of the human race, demand it.* Such, however, is the hypocrisy of the day, that even a notice thereof in a dead language is abused and condemned by the ignorant, intolerant bigots and fools, who are unable to appreciate the importance of the subject."—DR. RYAN.

With the preceding excellent remarks we open upon the subject of a malady which is so wide spread and general, and one which, for the observance of a false delicacy, is not generally treated upon by writers on health; prompted by a desire to mitigate evil and disease, I shall briefly treat upon it. This important subject is much too often overlooked; now, upon reflection, it does seem bitterly surprising that in our modern Babylon there are no less than from eighty to one hundred thousand living by prostitution, there must be something here desperately wrong. Not only is this practice of prostitution so very prevalent in our cities and towns, but, sad to say, the married are frequently, none the less guilty of sexual excesses; thinking themselves entitled to a perfect glut of indulgence, they little suspect it as the cause of their physical or mental weaknesses. Besides these there is a practice more prevalent and which is carried on, to some extent, by a very great percentage of our youths of both sexes. I refer to Masturbation or Self Pollution, I think, much as reform is needed in other matters, no reform—not even in reference to alcoholic drinks—demands more attention than reform in reference to this one solitary vice! There is not a town in England whose bills of mortality, yearly, are not greatly increased by this fearful and wide wasting scourge. Self Pollution is undoubtedly one of the most common causes of ill health that can be found among the young men and women (for females do not escape from this horrible

vice, they may be less infected, yet females, young and modest, are dying by thousands of consumption, female complaints, nervous diseases, and some even of insanity, caused by this practice) of this country. It is commenced at an early age, when the youth is stalwart and vigorous, with the bloom of health upon the cheek, but alas ! it soon fades, the habit once formed, like that of intemperance, becomes almost unconquerable. In our boarding schools and colleges it obtains almost without an exception. Hence we have so many sickly students, and the many youths, possessing talents the most brilliant and promising, whose constitutions have become broken and the grasp of the mind degenerated, not "by hard study," but by this horrible vice.

These habits fill the mind with lewed and corrupt images ; deaden all the natural spirit of youth ; the votaries become as faded flowers, wandering skeletons ; nothing remaining except decayed intellectual faculties, loss of memory, impairment of the interest which usually used to be taken in the affairs of life, continual anguish, decay of physical powers, lassitude, weakness, paleness, palpitation of the heart, indigestion, diminution of sight, sterility (in both sexes), hysteria in females, trembling ; in fine, the whole system becomes deteriorated, the brain and nervous system is deranged, and digestion and circulation is impaired.

In a normal condition, the peculiar function of the generative organs requires a greater intensity of nervous influence and force than is usually directed to the functions of the general system, and consumes the powers of vitality in a proportionate degree. Considering, therefore, the frequently repeated exercise, and the abnormal and over-excited condition of these organs in a state of disease, the

fearful results to the muscular and vital forces, the shattered nerves, mental and physical prostration, such terrible havoc does no longer become a matter of wonder.

To all suffering from sexual exhaustion, caused by either of the above—excess or masturbation, let me earnestly impress upon you to desist, and at once! There is but one alternative, Life or Death; if healthiness of the former is to be obtained, then RESOLUTION, *Determination* to stop in your ruinous course must be the starting point.

TREATMENT.—1. From whatever exciting cause the exhaustion may have had its origin, the removal of the disease will depend on such means which tend to increase the nervous and muscular forces. To accomplish this, there is nothing that will equal the preparations of Erythroxyton Coca; this drug has restored hundreds of such cases. Bathe the parts daily with cold water; hip baths, foot baths, vapour baths are all of very great value. Prepare the following mixture for outward application:

Rp Oak Bark 4 ounces.

Boil in two quarts of water, down to one quart; when cold, strain; add three tablespoonsful of Compound Essence of Cocaine and two tablespoonsful of common salt. Soak a cloth in a part of this mixture, wring out, wear it at the bottom of the back; keep it in place by fastening over it, and round the body, a piece of flannel. Renew this once a day.

As a medicine, let the following be taken:

Rp. Brain Feeder 2 ounces
 Glycerine Extract of Coea 1 ounce

DOSE.—Two or three teaspoonsful to be taken four times a day in a little water. Regulate the bowels by taking one, two, or three of the Chionanthus Liver Pills, daily. Let the diet be light and nourishing; vegetables, eggs, egg puddings, very little or no meat, milk, milk and Essence of Cocaine, no alcoholic drinks.

2.—Or, substitute, for the Essence of Cocaine, in the mixture for external application, two teaspoonsful of Composition Powder and one ounce of Coca Leaves, pouring the boiling liquid over them.

As a medicine give the following:

Rp. Glycerine Extract of Coca ... one teaspoonful four times a day in a tablespoonful of Infusion of Golden Seal. Regulate the bowels by taking Aperient Pills.

DISEASES PECULIAR TO WOMEN.

There are two most important and critical periods in the life of females, at which the constitution undergoes a complete and material change. The first change is the time at which the catamenial discharge *commences*, which is usually between the age of twelve and sixteen, and upon its due and proper appearance depends the future health of the female; consequently, mothers, who are solicitous for the well-being of their daughters will watch over them with a great amount of care during this peculiar period of their life. The second great change is the cessation of this discharge, and generally takes place between the ages of forty and fifty. Where menstruation (as the monthly discharge is termed) does not begin about the age above mentioned, the young person becomes affected with *chlorosis*, green sickness, or retention of the menses, she shews symptoms indicative of exhaustion: indigestion, loss of health and spirits, failing of appetite, pallor of countenance, her ancles swell and complaining of pain and aching in the legs, back, and loins; often sighing, dull, and sluggish; greenish yellow colour of the skin. When the menstrual function has become suppressed, as often is the case from torpidity of the vessels of the uterus, due to insufficiency in the supply of nervous force to that organ, brought on by the sudden action of cold, sudden

frights, wet feet, disease, anxiety of mind, etc., it is called *amenorrhœa*, obstruction of the menses; continued suppression may give rise to bleeding from the nose, lungs, or stomach. The periodical discharge may appear at the proper period, yet it is in such small quantities, and attended with a great amount of pain of a spasmodic character, it is then termed *Dysmenorrhœa*; there are severe pains in the loins, tenderness of the stomach and bowels, colic and neuralgic pains at the bottom of the bowels, vomiting, difficulty of passing the urine, cramps, etc., the discharge is generally scanty and slow. Or, again, some females are subject to a too frequent return of the flow, which at the same time is, by far, too abundant; this may be brought on by any cause which depresses the vital forces: exposure to wet and cold, violent exercise, tight lacing, etc.

TREATMENT. The cure of these irregularities, as in all other forms of disease, can be brought about simply and only by increasing the tone and force of the nervous system, and through it, of the system in general; and as these departures from nature's course are dependent upon diminished controlling power, it is evident that if we once bring the system into a healthier condition, balance of action will be induced in the uterine functions.

Is the patient suffering from chlorosis? If so, it doubtless arises from indigestion as the secondary cause. Consequently, the patient should be treated as under that head; let the feet be put in warm water and mustard every night at bed time; regulate the bowels by taking the Chionanthus Liver Pills or Aperient Pills. After a short course of treatment as under Indigestion, give doses of Brain Feeder in a strong tea of Tansey.

Is the patient suffering from *Amenorrhœa* or suppression?

Give doses every four hours of Brain Feeder in a tea made of Tansey and Motherwort. Give a vapour bath once a week; warm water and mustard foot-baths; or, prepare the following decoction: Tansey, Yarrow, and Cammomile Flowers, each one ounce; water, three quarts, boil them for ten minutes; throw the whole into a pan, and let the patient stand or sit over the steam for ten or fifteen minutes, let this be continued for a few nights before and during the expected monthly flow, that is just before going to bed. Regulate the bowels.

Or give the following medicine: half-an-ounce each of Motherwort, Tansey; Boil in one and a half pint of water for ten minutes, strain on to half an ounce of Coca-leaf, half an ounce of Black Cohosh, and half-a-teaspoonful of Composition Powder; let them stand for twenty minutes; strain. DOSE:—One or two tablespoonsful to be taken every three hours.

Is the patient suffering from Dysmenorrhœa, or painful menstruation? Adopt the above mentioned treatment for Amenorrhœa.

In cases of profuse menstruation let the following medicine be taken: Brain Feeder, one ounce; Tincture of Hamamalis Vir., half an ounce, mix. DOSE:—Two teaspoonsful every three hours in Raspberry Leaf Tea.

FLUOR ALBUS, OR WHITES.

This is a discharge of a white, or milky, glairy, mucous fluid from the vagina; it is usually accompanied by pain and soreness, and heat of the parts, frequent, but difficult passing of water, and more or less disordered nervous system.

CAUSES.—Indolence, uncleanness, nervous exhaustion, etc., etc.

TREATMENT.—Same as for profuse menstruation.

The diet in all cases should be light and nourishing : milk and Essence of Cocaine, eggs, oysters, fruit, vegetables, bread made from entire wheat flour, etc.

DISEASES OF PREGNANCY.

As soon as pregnancy takes place there are frequently a great number of unpleasant symptoms which make their appearance owing to the use of improper diet and exercise, following the present extraordinary customs and fashions in regard to dress, etc., etc. The most remarkable of the unpleasant symptoms, which first call our attention, are *nausea and vomiting*.

SICKNESS. Many women are, during pregnancy, harassed by this nauseating sickness, or vomiting, usually after getting out of bed in the morning, and sometimes after taking food; the appetite is very whimsical.

Let me recommend the sufferer from vomiting never to rise until she has had a cup of Essence of Cocaine in water, or of tea. As a medicine give doses of the Brain Feeder in peppermint tea, three times a day. Regulate the bowels by taking either Chionanthus Liver Pills, or Aperient Pills, (appendix.) Or give the following medicine: Coca Leaf half an ounce, Golden Seal, powder, half an ounce, Peppermint half an ounce, Composition Powder half a teaspoonful, boiling water one and a half pint. Let them stand 30 minutes, strain. DOSE: Two tablespoonsful three times a day.

HEARTBURN. Give neutralizing mixture (appendix). Regulate the bowels.

TOOTH ACHE. Apply the Compound Essence of Cocaine externally. Regulate the bowels by taking either the Chionanthus Pills, or Aperient Pills. Take the Brain Feeder in a tea made of Powdered Black Cohosh, (half an ounce of powder to one pint of water.)

LONGINGS. It is always desirable, if possible, to gratify the longings of pregnant women, else, in nervous subjects, miscarriage is liable to be induced from the nervous excitement these produce.

DIFFICULTY AND PAIN IN PASSING THE URINE. This condition mostly occurs in an advanced stage of pregnancy, due to pressure of the womb. Give Brain Feeder in a tea made of Marsh Mallow Roots, one ounce, boil in a pint and a half of water for 15 minutes, strain on to one ounce of Parsley Root, let it stand for 15 minutes. Keep the bowels regular.

SWELLINGS OF LEGS AND FEET. Treatment same as last. Vapour baths weekly. Avoid too much exercise, and do not remain too long on the feet. Application of Compound Essence of Cocaine to the legs is valuable.

PAINS IN THE BACK, COLIC, AND CRAMPS. Give Brain Feeder in a tea made of Pennyroyal and Powdered Pleurisy Root, repeated at intervals of from half an hour to four hours, according to urgency of the symptoms. Or, give repeated doses of the following mixture: Coca Leaf, half an ounce; Composition Powder, quarter of an ounce; boiling water one pint. Let them stand together for half an hour, strain. DOSE, two tablespoonsful. In cramp of the limbs, rub the parts with Compound Essence of Cocaine; or a mixture of equal parts of Tincture of Myrrh and Tincture of Cayenne. If there is cramp of the stomach or bowels use warm fomentations.

CONSTIPATION. If costiveness is an attendant symptom, then give doses of the Chionanthus Pills or of the Aperient Pills (appendix).

ABORTION.—Where a pregnant female is in fear of a miscarriage or an abortion, it may be averted by the exercise of care. The causes of such may be either local or general. It

may be brought on by a blow, a fall, violent mental emotion, or irritation of the uterine organs. It may be due to a predisposition in the female to miscarry, due to general weakness, impairment of health; it may be excited by death of the foetus, excitement of the uterine nerves partaking of the general condition of the body; long walks, fright, joy, sorrow, etc.

TREATMENT. 1. If the female is subject to abortion, or miscarriage, or has a fear that she will not be able to hold up during the important period, then all means must be used during pregnancy to raise the vital powers. Give two teaspoonsful of Brain Feeder in about two tablespoonsful of Raspberry Leaf tea, repeat this three times a day. This medicine will have an excellent effect, will prevent or remove those bearing down pains in the back, to which weakly females are subject; will prevent and stop floodings, etc., etc. Keep the bowels regular.

2. Or, give the following medicine :

Rp.	Coca Leaf	$\frac{1}{2}$ ounce.
.	Raspberry Leaf ...	1 ounce.
	Golden Seal	$\frac{1}{4}$ ounce.
	Composition Powder ...	1 teaspoonful.

Pour on them a pint and a half of boiling water, let them stand half an hour, stirring occasionally; strain, gently pressing the leaves.

DOSE:—Two tablespoonsful to be taken three times a day.

HYSTERIA.

This peculiar disease is so-called from its supposed cause being irritation of the womb. Males are not subject to hysteria, but they are to a similar disorder, termed hypochondriasis. Hysteria is known by the convulsive movements of the trunk and limbs, beating of the breast with clenched hands, tearing of the hair or clothes, a feeling of suffocation as if a ball was rising in the throat, the

head is often thrown violently back; the attack generally ends in a fit of crying and sobbing, or of laughing.

CAUSES. The causes are general nervous exhaustion, the fit may be excited by emotion—passion, sorrow, joy, etc.

TREATMENT. During an attack, let the dress be loosened, prevent self injury, surround the body with cool air; Give equal parts of Brain Feeder and Compound Essence of Cocaine, two teaspoonsful of each, in half a cupful of warm sweetened water, give a teaspoonful every five minutes; rub the hands, and if possible, put the feet in hot water and mustard. Or, give Tincture of Lobelia and Tincture of Valerian, in warm water.

During the interval of attacks give medicines that will raise the general health; if due to irregularities in the menses, treat as such. Give her nourishing food, exercise in the open air, healthy mental occupation; sponge baths daily.

TURN OF LIFE.

Between the years of forty and fifty the second great change in woman's condition takes place—I refer to the *cessation* of the menses. Menstruation does not cease all at once, but it frequently subsides gradually, and is attended with irregularities as to quantity, quality, and period; the discharge may return every two or three weeks, then cease for several weeks or months, and afterwards recur for a short time as regular as ever, and then cease altogether. If the woman be in health, there may be no inconvenience, but when in disease there is suffering, physically and mentally, the following symptoms frequently occur: the appearance of some of the symptoms are such as to lead to the conclusion that pregnancy is in course of progress. Pain and swelling of the breasts, increase in size of the abdomen, and also movements occasioned by the presence of wind;

indigestion is a prominent symptom, headache, lassitude, aching in the back and limbs, etc.; or there may be Fluor-albus, displacement of the womb, etc. Should any of the above symptoms occur, adopt the following:

TREATMENT. Occasional hip and foot baths are of inestimable value, as are also sponge baths, either with tepid or cold mixtures; careful attention to diet, dress, let not the follies of fashion beguile you! Rest for a few hours during the day, on a bed or a couch is of utility; a proper amount of exercise in the open air is absolutely necessary, breathing fresh air, etc. Keep the bowels regular by taking Chionanthus Pills, or Aperient Pills, (appendix.)

Let the medicine consist of doses of Brain Feeder, three times a day, in a little decoction of Marsh Mallows Root. (appendix).

Or, give the following-

Rp.	Coca Leaf	$\frac{1}{2}$ ounce.
	Golden Seal, powder ...	$\frac{1}{2}$ ounce.
	Composition powder ...	1 teaspoonful.
Boiling decoction of Marsh Mallow Root		1 pint.

Let them stand for half an hour, stirring now and again; strain.

DOSE:—Two tablespoonsful to be taken three times a day.

As a diet drink nothing equals the Compound Essence of Cocaine in Milk.

DISEASES OF CHILDREN BEFORE AND DURING TEETHING.

Very great attention and carefulness are requisite to treat the diseases of infants judiciously and successfully, and they generally require rigid and repeated observation in order to supply the necessary data for determining the nature of the complaint; but, however, the number of these diseases are comparatively small, their causes uniform, and the treatment of them simple and generally certain. There are many

of the little ailments to which children are subject that *mothers*, with care and attention, might easily remove, and thus prevent more serious maladies and the expense and trouble of calling a doctor in. Before noticing some of these diseases it may be well to make a few remarks on

THE MANAGEMENT OF CHILDREN.

It is during infancy that the foundation of a good constitution is generally laid, and it is therefore of paramount importance that the dietetic and hygienic management of children be carried out on right principles, that is, in order to procure health.

DIET. During the first three or four months the milk of the mother is unquestionably the best food, provided always that the parent is in good health. As a rule it is not good for the nursing mother to take much food of a liquid character in order to "make" milk. If there should be deficiency of the natural secretion, it is well, and at times absolutely necessary, to rear the child partly by giving it milk and water, just warmed, slightly sweetened. The milk should be obtained from cows which are fed on pastures, not on slops. It is, moreover, necessary, in order to preserve health, that the diet be regulated, both as regards quality and quantity, that the infants little stomach be not oppressed by improper, excess, or deficiency of food. Whatever be the age of the child it is always advantageous to regulate the periods of nursing, whether by the breast, or by prepared food, so that the meals be taken at nearly equal intervals of time, of course, they must be short at first, but gradually extended. By the exercise of a regular system of dietary the infant will be found to thrive in a far more pleasing manner than by the very prevalent system of irregular feeding. The minimum of interval may be fixed at an hour and a quarter, in ordinary circumstances, and

the maximum interval of three hours. After the first month it is sufficient to nurse it every two hours. A child thriving will increase about a pound per month, for the first six months. If it is absolutely necessary that a Feeding Bottle be used, let it be of the simplest construction, and one which is easy to keep clean.

Let me urge on the parent that the healthfulness of herself is necessary to ensure healthy, nourishing, and digestible milk for her infant ; and it is impossible, if the mother impairs her health by the use of improper food, want of exercise, impure air, exercise of passions, &c., it is impossible, I say, to provide a wholesome and uncontaminated fluid.

At the end of about five months the mother may begin to give, occasionally, along with the breast, a little milk and water, slightly sweetened ; or, a little bread soaked in milk, then passed through a sieve, and again mixed with milk. This sieving will ensure the breaking up of all hard particles which would injure the infant's stomach. At the end of six or seven months plain chicken or mutton broth may be allowed, and occasionally a little light pudding. At nine or ten months a little animal food may be given ; bread crusts to suck. The diet may afterwards consist of a small portion of vegetables, farinaceous articles—rice flour, sago, entire wheat flour, &c.

WEANING. As nothing is gained by continued nursing at the breast for a long time, the child should be weaned about the fourteenth month, earlier or later, according to condition of mother. The stomach of the infant should be gradually habituated to the new substances which are to form the basis of its nutrition, before abruptly breaking off from nursing at the breast.

HYGIENE. As a rule let a child have no more clothes on

it than are absolutely necessary to keep it warm, they should sit easy and loose, avoid bandages and other tight articles ; it is necessary that they be changed frequently, if wet or soiled ; dirty clothes irritate the tender skin of infants and are apt to produce serious cutaneous disorders. Bathing should never be neglected, as it contributes greatly to health ; bathe daily with tepid or cold water. If there is chafings, wash well with soap and water, dry, and cover with powdered starch. Pure air and plenty of exercise are necessary. While the child is asleep, let the limbs be free to move about. Do not let the child sleep in the arms or on the lap of the nurse.

We will now proceed to notice some of the more common diseases of young children.

HIC-COUGH. Some infants are much troubled by this affection, spasmodic action of the diaphragm, which probably arises from acidity of the stomach, or from some nervous irritation. *Treatment.*—Give Child's Restorer in a little Balm Tea ; or, give small doses, according to age, of Infant's Soothing Syrup (appendix).

COLIC, ACIDITIES, FLATULENCY, AND VOMITING.—When the food becomes, through indigestion, acid on the stomach, instead of being properly digested and converted into chyle and blood, it acts as a deleterious poisonous ingredient causing great irritation, crying, restlessness, hiccups, sour eructations, vomiting, griping pains, diarrhoea or green stools, flatulency, and great depression of strength. *Causes.* The symptoms may be occasioned by over-loading the stomach with food, acrid, irritating, or unwholesome food, impure air, uncleanness, &c., &c. *Treatment.*—Give half a teaspoonful to a teaspoonful of the Child's Restorer in a little Balm Tea, every one or two hours. Or, give a teaspoonful of the Infant's Soothing Syrup every one or two

hours. Regulate the bowels by giving occasional doses of the Aperient Mixture, or a few grains of Powdered Rhubarb, mixed with a little sweetened water.

DIARRHŒA. Looseness of the bowels may be and is frequently occasioned in infants by unsuitable food, exposure to cold, or increased excretion of bile; confinement in ill ventilated rooms, insufficient attention to cleanliness. The stools are often slimy or tinged with blood, or are green or curdled stools, and griping.

TREATMENT. The cause, whatever it is, must be removed; cleanliness is absolutely necessary, as is also that the child be kept dry and warm. Give a dose of the Child's Restorer in a syrup made from Blackberry Roots (appendix) after each motion; or, give half a teaspoonful of the Infants Soothing Syrup in a teaspoonful of the syrup of Blackberry Roots. Exercise very great care as regards diet, cleanliness, and exercise in the open air, if possible.

THRUSH. This disease is caused by the development of a peculiar fungoid growth in the lining membrane of the mouth, which may also extend to the stomach and intestines. The disease is characterized by a mouldy appearance, or frost-like fur, either in distinct spots or covering the mucous coat of the mouth. The disease generally appears first in the angles of the lips, then on the tongue, and cheeks, in the form of white specks, which increase in size and number, running together and comprising a thin white crust. Feverishness generally accompanies thrush. The disease is a frequent accompaniment of irritation of the stomach and bowels in weakly children. When the child is in a low state of health it often produces unhealthy sores, swelling in the surrounding parts, becoming soft and livid; the child refuses food, becomes pale and cold, and unless active means are used, soon falls a victim to death.

TREATMENT. Give the little patient doses of the Child's Restorer in Raspberry Leaf Tea every two or three hours. Give one or two doses, daily, of the aperient mixture. Make the following mixture and apply a little to the sores, with a feather, every three hours: Glycerine, one ounce; Powdered Borax, quarter of an ounce, put them into a cup; now put the cup into a basin containing a small quantity of boiling water, let them stand for one hour, stirring occasionally, let the mixture cool, and it is ready for use. Wash the body down with tepid water containing a small quantity of soda, every morning, rub well with a dry cloth. Give milk and Compound Essence of Cocaine.

CONVULSIONS OR FITS. This complaint has been noticed by most experienced mothers and nurses; it appears to be due to some peculiar idiosyncrasy, which lying latent in the system is brought out by any trifling matter capable of irritating the nervous system; irritation of the stomach and bowels, improper food, sudden exposure to heat or cold, flatulence, acrid matter in the bowels, teething, worms, etc. The convulsions may attack only one limb or one side of the body, attended with foaming at the mouth, flushing of the face, grinding of the teeth, the head is thrown to one side or backwards.

TREATMENT. 1.—Give doses of the Child's Restorer every one or two hours in warm infusion of Balm. Regulate the bowels by giving doses of the Aperient Mixture. Give warm baths, occasionally. During an attack Bathe the feet in warm water and Mustard.

2.—Or, the following medicine may be given: Coca Leaf quarter of an ounce; Balm, quarter of an ounce; Vervain, quarter of an ounce; boiling water half-a-pint; let them stand for half an hour, strain, and make up to half-a-pint with

Infant's Soothing Syrup, sweeten a little. DOSE:—Two teaspoonsful every two hours. Give milk and Compound Essence of Cocaine.

RICKETS. This is a common disease to which infants are subject. It is characterized by debility, emaciation, impaired digestion, softening of the bones, so that the natural form of the frame becomes altered, either from the weight of the body, or from muscular contraction. It is peculiar to infancy, and common to these children who have *improper* and insufficient food, and who breathe impure air.

TREATMENT. Give doses of the following mixture:—Syrups of the Hypophosphites of Iron, Lime, and Soda, each one ounce; Glycerine Extract of Coca, half an ounce, mix. DOSE.—One half to one teaspoonful three times a day in a little Raspberry Leaf Tea. Regulate the bowels. Good nursing, change of air, cleanliness, exercise in the open air; cold or tepid baths, daily, afterwards wipe dry with a coarse cloth, dry friction; dress comfortably warm. Diet, bread and milk; milk, lime water, and Essence of Cocaine; tapioca; light puddings; bread made from entire wheat flour.

DIFFICULT TEETHING. Of all the occurrences to which children are liable, not one is attended with such grievous and distressing symptoms as difficult dentition. The cause may be any one of the complaints previously treated of. The stomach is the organ generally at fault, therefore attention should be generally directed to it (See Colic, Acidities, Flatulency, &c.). Give, daily, doses of the Aperient Mixture. Warm baths are useful. If the gums are inflamed, rub with Compound Essence of Cocaine or Tincture of Myrrh. Give proper food; pure air; keep clean and warm; and carefully attend to the stomach and bowels.

APPENDIX.

NEUTRALIZING MIXTURE AND SOOTHING SYRUP.

Rp.	Rhubarb Root, bruised	...	...	1 ounce
	Cinnamon Bark, bruised	...	...	1 ounce

Boil in one quart of water for twenty minutes, strain on to the following:—

Coca Leaf	...	...	...	$\frac{3}{4}$ ounce
Peppermint Herb...	...	...	...	1 ounce
Bicarbonate of Potash...	...	...	...	$\frac{3}{4}$ ounce

Let them stand for half an hour; gently press out the liquid, strain, add a little water until the whole bulk of liquid measures one quart, then add one and a half pound of lump sugar, gently heat over a fire, do not boil; strain, cool, and bottle.

Dose.—Half a teaspoonful to one tablespoonful in a little warm or cold infusion of Pennyroyal, or of water, every three or four hours.

Valuable in Constipation, Indigestion, Cholera, Sickness, &c., and for diseases of children.

PAIN KILLER.

Rp.	Soothing Syrup	...	...	8 ounces
	Brain Feeder	...	...	2 $\frac{1}{2}$ ounces
	Sweet Spirit of Nitre	...	...	1 ounce
	Tincture of Pleurisy...	...	..	1 ounce
	Tincture of Sculcap	...	..	$\frac{1}{2}$ ounce mix.

Dose.—Two teaspoonsful to one tablespoonful to be taken in a little water three or four times a day. Half quantity for children.

A most excellent remedy for pain of every description,

fainting, palpitation of the heart, inflammations, suppression of urine, and kidney affections, headache, &c., &c.

RESTORATIVE DROPS.

Rp.	Brain Feeder	3 ounces
	Compound Essence of Cocaine...	1 ounce
	Glycerine Extract of Coca...	$\frac{1}{2}$ ounce
	Bicarbonate of Potash	2 drams

Dissolve one pound of Lump Sugar in a quart of boiling water, strain, when cold add the above ingredients, mix.

Dose.—A wineglassful as required.

This is truly a pick-me-up for all sufferers from nervous depression, debility, indigestion, brain exhaustion, caused either by excess of physical or mental exertion. This mixture possesses wonderful sustaining powers and a dose of it should be taken by all individuals, every two hours, before and during their work. It is not to be equalled in all cases of debility of body or mind. Be sure that the bowels are regulated by taking occasional doses of the Chionanthus Liver Pills. We advise all sufferers to try it.

SUMMER BEVERAGE.

Rp.	Agrimony	2 ounces
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Boil in one gallon of water for fifteen minutes, strain; add sufficient water to make up for what has evaporated; add half a pound of sugar, simmer gently for a few minutes, take off the scum; strain; add one ounce of Cream of Tartar and two ounces of Compound Essence of Cocaine. Drink *ad libitum*.

The above forms a most pleasant and refreshing summer beverage.

NEURALGIA, TIC, AND ALL PAINFUL NERVOUS AFFECTIONS.

Rp.	Brain Feeder	2 ounces
	Compound Essence of Cocaine	1 ounce
	Tincture of Sculcap	1 ounce
	Fluid Extract of Motherwort ...	1 ounce
	Tincture of Gelsemium... ..	$\frac{1}{2}$ ounce
	Bicarbonate of Potash... ..	2 drams mix.

Dose.—One teaspoonful to be taken in sweetened water every two

or three hours. It is also an excellent remedy applied externally, by rubbing the parts with a little of the mixture.

APERIENT MIXTURE.

Rp.	Powdered Rhubarb	...	...	...	...	1 dram
	Magnesia	...	...	...	...	$\frac{1}{2}$ „
	Bicarbonate of Potash	...	...	...	...	$\frac{1}{2}$ „
	Aromatic Spirits of Ammonia	...	..			1 „
	Dill Water, sweetened well with sugar					4 ounces
	Mix well.					

Dose :—One teaspoonful to one tablespoonful (according to age) to be taken twice or three times a day. Shaking the bottle before each dose is poured out.

APERIENT PILLS.

Rp.	Rhubarb, in Powder	...	...	...	5 drams
	Aloes, Barbadoes, Powdered	...	...		1 dram
	Gum Myrrh, Powdered	...	...	...	1 „
	Castile Soap, shavings	...	...	...	30 grains
	Extract of Hyoscyamus	...	...	...	1 dram
	Extract of Camomile	...	...	...	1 „

Mix well, and roll into 140 pills. *Dose* :—One, two, or three to be taken as required.

COMPOSITION POWDER.

Rp.	Bayberry Bark, powdered	...	...	6 ounces
	Curcuma, powdered	..	...	9 „
	Ginger, powdered	...	...	6 „
	Pleurisy Root, powdered	...	...	2 „
	Allspice	...	...	$2\frac{1}{2}$ „
	Cayenne, powdered	...	...	$\frac{1}{2}$ ounce. Mix.

EMETIC POWDER.

Rp.	Ipecacuanha Powder	...	...	1 dram
	Lobelia Powder	...	...	1 „
	Blood Root Powder	..	...	$\frac{1}{2}$ „ Mix.

Dose.—A quarter or half a teaspoonful, repeated every twenty minutes if required. During the action give plenty of the Compound Essence of Cocaine in warm sweetened water.

This Powder is admissible in all cases where an emetic is indicated: in croup, chronic affections of the chest, liver,

stomach, or in febrile diseases.

PULMONARY SYRUP.

Rp.	Pleurisy Root, bruised	... ..	1 ounce
	Spikenard Root, bruised	... ..	1 ounce

Boil in one quart of water for twenty minutes, then pour the boiling liquid on to

Boneset	... ..	1 ounce
Coca Leaf	... ..	1 ounce
Cherry Bark coarse powder	... ..	2 ounces
Composition Powder...	.. ..	$\frac{1}{4}$ ounce

Let them stand for one hour, stirring occasionally, then strain, and add Decoction of Slippery Elm, sufficient to make one quart of mixture. To the mixture add two pounds of lump sugar; simmer gently for five minutes; when cold add

Tincture of Lobelia	... ..	2 ounces
Essence of Spearmint	... ..	$\frac{1}{4}$ ounce mix

Dose.—One teaspoonful to one tablespoonful (according to age) to be taken every three hours or as required.

This is an excellent remedy in coughs, tightness of the chest, difficulty of breathing, asthma, &c., &c.

ALTERATIVE MIXTURE.

Rp.	Yellow Dock Root	... ..	1 ounce
	Prickley Ash Bark	... ..	1 ounce
	Tag Alder Bark	... ..	2 ounces

Boil in one quart of water down to one and a half pint, pour the boiling liquid on to the following ingredients:

Coca Leaf	... ..	1 ounce
Queen's Delight, powdered	... ..	$\frac{1}{2}$ ounce
Powdered Rhubarb	... ..	$\frac{1}{2}$ ounce
Composition Powder	... ..	1 teaspoonful

Let them stand together for one hour, strain.

Dose.—One or two tablespousful to be taken three times a day.

This is an excellent remedy in all impurities of the blood: boils, ulcers, cancers, venereal diseases, scrofula, skin diseases, &c., &c.

IRRITATING PLASTER.

Rp.	Burgundy Pitch	3 ounces
	White Turpentine (Gum Thus.)	2 ounces

Melt and then add 6 ounces of good Tar, mix, strain while hot, then add of blood root, poke root, lobelia, all in powder, of each one and a half ounce; mix well. *Directions*.—Spread a little on a piece of soft leather, and apply over the affected part. Keep on as long as can be borne.

This plaster brings out on the skin small pustules or eruptions, and causes a slight discharge. It is an excellent application in all cases where counter-irritation is required, as in the case of severe internal inflammations.

OINTMENT.

Rp.	Marshmallow tops, green and bruised	8 oz.
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Simmer, in 8 ounces of Olive Oil, for half an hour, press out the fluid portion, strain, and add of

Spermaceti	... ..	2½ ounces
White Wax...	... ..	1 ounce

Dissolve by the aid of gentle heat; when dissolved remove to a cool place, and stir constantly until quite set.

This is an excellent simple ointment for all kinds of cutaneous eruptions.

POULTICE NO. 1.

Rp.	Crushed Linseed	... ..	2 ounces
	Ginger, in powder	... ..	½ ounce
	Lobelia Herb, powdered	... ..	½ ounce

Mix together, and pour on sufficient boiling water to make a poultice of convenient consistence.

This is a very good and beneficial poultice in removing all internal inflammatory affections; such as bronchitis, inflammation of the throat, lungs, bowels, stomach, bladder, pleurisy, &c.

POULTICE NO. 2.

Rp.	Slippery Elm Bark Powder...	a sufficient quantity
Mix with a little hot water or milk so as to make a poultice.		

This poultice will be found to exceed every other in point of efficacy. It is capable of very extensive application for both external and internal inflammations. It is useful in inflammation of the breast, felons, white swellings, wounds, sores, boils, ulcers, gatherings, &c., &c.

DECOCTION OF PLEURISY ROOT.

Rp. Pleurisy Root, bruised ... 1 ounce
 Water 1½ pint

Boil gently, until the whole bulk of liquid is reduced to one pint.

Dose :—One teaspoonful to two tablespoonsful to be taken as often as may be required. It forms a convenient vehicle for the administration of other medicines.

This is excellent, when taken in conjunction with the Brain Feeder, for all kinds of fever, colds, coughs, &c.

INFUSION OF SLIPPERY ELM.

Rp. Slippery Elm Bark, sliced thin ... ½ ounce
 Boiling water 1 pint

Place in a covered vessel and let them stand for one hour; strain.

It is very useful in inflammation of the stomach, bowels, eyes, &c.; and is a very valuable medicine in dysentery, diarrhoea, and bowel complaints generally. Drink freely.

DECOCTION OF MARSH MALLOW ROOTS.

Rp. Marsh Mallow Root, in slices 1 ounce
 Water 1½ pint

Boil it fifteen minutes, let cool, strain. Drink freely.

It is a good substitute for Infusion of Slippery Elm Bark, and may be used in all cases where that infusion is indicated. We may also add that it is of great value in inflammation of the bladder or kidneys.

INFUSION OF GOLDEN SEAL.

Rp. Golden Seal, in powder ... 1 ounce
 Boiling water 1 pint

Let it stand for half an hour; strain. *Dose* :—One teaspoonful to two tablespoonsful three or four times a day.

This is of great service in chronic derangement of the liver and stomach, and is invaluable as a tonic during convalescence from exhausting diseases, such as bilious and typhoid fever, inflammation of the stomach, diarrhoea, dysentery, &c.

INFUSION OF SNAKE ROOT.

Rp. Snake Root (*Aristolochia Serpentaria*), bruised. 1 ounce

Boiling water 1 pint

Infuse for two hours in a covered vessel, strain. *Dose*:—One or two tablespoonsful three or four times a day.

DECOCTION OF RASPBERRY LEAF. (*Raspberry Leaf Tea.*)

Rp. Raspberry Leaf .. 1 ounce

Water 1½ pint

Boil for twenty minutes; strain. Drink freely.

This decoction is valuable in diarrhoea, dysentery, and hemorrhage of the stomach and bowels. It is also much used by females.

SYRUP OF BLACKBERRY ROOT.

Rp. Blackberry Root Bark ... 2 ounces

White Sugar 4 ounces

Brandy 1 ounce

Water 1 quart

Boil the root in a quart of water, down to ten ounces, strain, add the sugar, and when quite cold add the brandy.

Dose:—Two teaspoonsful to one tablespoonful three times a day.

This is very valuable in chronic bowel complaints.

ANTI-CHOLERA DROPS.

Rp. Coca Leaf 3 ounces.

Angelica Root Powder .. 2 ounces.

Cranesbill Root Powder .. 2 ounces.

Gum Myrrh Powder .. 1 ounce.

Bayberry Bark Powder .. 2 ounces.

Camphor ½ ounce.

Cayenne ½ ounce.

Spirits of wine 3 pints.

Macerate for 21 days, with occasional agitation ; filter.

Dose.—One, two, or three teaspoonsful, in a little water, every 30 or 60 minutes.

For cholera, diarrhœa, cramp, &c.; and for flooding in females no remedy has been more successful.

ERYSIPELAS MIXTURE.

Rp.	Yarrow Flowers	..	..	1 ounce.
	Elder Flowers	..	..	2 ounces.
	Boiling Water	..	..	1½ pint.

Let them stand for one hour ; strain.

Dose.—Two teaspoonsful to two tablespoonsful to be taken every two hours.

A never failing remedy in all cases of erysipelas, inflammations, &c.

MIXTURE FOR CHRONIC RHEUMATISM.

Rp.	Tincture of Americau Valerian	1 ounce.	
	Tincture of Black Cohosh	.. 1 ounce.	
	Tincture of Prickly Ash	.. 1 ounce.	
	Glycerine Extract of Coca Leaf	1 ounce.	mix

Dose.—One teaspoonful every three or four hours, as required.

Valuable in all cases of chronic rheumatism, lumbago, sciatica, &c.

WASH FOR INFLAMED EYES.

Rose water	..	..	1 ounce.	
Tincture of Golden Seal	..	..	1 dram.	
Laudanum	..	..	1 dram.	mix

Wash the eyes with a small portion of the mixture, twice or thrice, daily.

DIURETIC PILL.

Rp.	Solidified Copaiba	..	..	1 ounce.
	Alcoholic Extract of Cubebs	..	½ ounce.	
	American Mandrake Powder	..	½ ounce.	
	Oil of Juniper	..	..	30 drops.

Mix. Roll into about 300 pills. Dose.—One or two, three or four times a day.

This pill invariably cures or affords relief in all diseases of the kidneys or bladder. For chronic affections of the bladder, kindeys, urethra, and also in gravel, gonorrhoea, gleet, and fluor-albus, it is superior to any similar preparation.

CANCER PLASTER.

Rp.	Extract of Poke Root..	..	1 ounce.
	Extract of Red Oak Bark	..	1½ ounce.
	Extract of Clover Heads	..	1 ounce.

Mix. Spread on leather as required.

An excellent external application for cancers ; to be used in conjunction with the alterative mixture.

INVALID'S FOOD.

Rp.	Finely Powdered Sugar	..	8 ounces.
	Slippery Elm Bark Powder	..	4 ounces.
	Fine Oatmeal	..	8 ounces.
	Rice Flour..	..	8 ounces.
	Cinnamon Powder	..	1 dram.

Mix well, until they are thoroughly incorporated. Take one or two teaspoonsful and mix with about 4 ounces of boiling water ; stir briskly while preparing.

This is an excellent preparation for invalids, whether adults or children, and may be taken with advantage at any time.

CATTLE POWDER.

Rp.	Angelica Root Powder	...	8 ounces
	Bayberries Powder	...	6 "
	Lobelia Herb Powder	...	5 "
	Ginger Root Powder	...	5 "
	Gum Myrrh Powder	...	3 "
	Sulphite of Soda...	...	3 "
	Cayenne Powder	...	2 " Mix.

Dose:—For a *horse* : Two ounces in a pint of warm gruel. *Cows* the same. *Calves* : Half an ounce. *Sheep* the same. *Lambs* a quarter of an ounce. To be repeated as required. Wrap up in rugs so as to sweat. Regulate the bowels by giving *Castor Oil*.

Stock keepers should never be without this preparation, it is invaluable in all kinds of ailments of cattlo.

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| Blood Root Powder .....      | 0          | 6  | Poke Root Powder.....      | 0          | 6  |
| Boneset .....                | 0          | 6  | Pulmonary Syrup .....      | 0          | 3  |
| Bicarbonate of Potash ....   | 0          | 4  | Pennyroyal.....            | 0          | 4  |
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| Balm .....                   | 0          | 2  | Rhubarb Root.....          | 0          | 4  |
| Blackberry Root .....        | 0          | 2  | Rhubarb Root Powder...     | 0          | 6  |
| Black Cohosh Powder ....     | 0          | 6  | Raspberry Leaf.....        | 0          | 2  |
| Coca Leaves .....            | 1          | 3  | Sulphite of Soda .....     | 0          | 4  |
| Cherry Bark Powder ....      | 0          | 6  | Spikenard Root.....        | 0          | 6  |
| Composition Powder.....      | 0          | 4  | Slippery Elm Bark .....    | 0          | 3  |
| Curcuma Powder .....         | 0          | 2  | Slippery Elm Bark Powder   | 0          | 4  |
| Chionanthus Vir. ....        | 1          | 0  | Solomon's Seal .....       | 0          | 6  |
| Cinnamon Bark.....           | 0          | 6  | Soothing Syrup .....       | 0          | 4  |
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| Gum Myrrh Powder.....        | 0          | 6  | „ Pleurisy .....           | 0          | 6  |
| Ipeeacuanha Powder ....      | 0          | 9  | „ Gelsemin ....            | 0          | 9  |
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